Health and Happiness Series

SEX HYGIENE

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SEX HYGIENE

INTRODUCTION

THE sexual instinct in animals and man is one of the most powerful fundamental instincts and as such deserves careful consideration. Working in the sub-conscious stratum of the mind and liberating it from the trammels of selfishness it may help the cause of civilization, progress and even religion. Some modern psychologists think that poetry and art have their origin in sexuality the term being used in its widest sense. Lord Tennyson sang thus :—

Sexual instinct as an operative force in nature.

> Love took up the harp of Life, and smote
> on all the chords with might ;
> Smote the chord of Self, that, trembling,
> pass'd in music out of sight.

Sexual instinct takes a very prominent part both directly and indirectly in moulding a man's character. But curiously enough the knowledge of sexual subjects among the laymen is very meagre.

Most persons do not even know the formation and structure of the sexual organs and it is not at all uncommon for medical men to find patients complaining of absolutely normal sexual functions as manifestations of a supposed disease. Even in medical literature the sexual functions receive a very scant

Ignorance of the subject.

attention. In current text books on physiology scarce y a page is devoted to the discussion of this important subject while matters of trivial importance are dealt with in detail.

Origin of Life.

How life originated in this earth is a question that has not been answered yet. Science tells us that this world of ours once formed a part of the blazing sun which as it cooled down threw out into the surrounding space masses of molten material which gave rise to the planets. At the stage in which our earth separated itself from the sun it was a fiery mass of molten and gaseous matter with a temperature much higher than that of the most intense furnace. As millions and millions of years rolled by, the temperature of the earth cooled down gradually.

After the earth crust cooled down sufficiently life in its present form began to appear. The exact mode of appearance of life on this earth is a matter of conjecture. It seems probable however that living things appeared from what is called the non-living.

Living vs. Non-living.

Living things have got certain properties by which they are distinguished from the non-living. (*a*) A living thing grows at the expense of material different from itself, while the crystal—one of the few non-living things which can be said to grow—increases at the expense of a material chemically similar to itself. (*b*) A living thing though undergoing ceaseless chemical change during the process of metabolism (the building up and breaking down process) still has the power of remaining the same for a more or less prolonged period. The basis of all living things is protoplasm which when dead is of the nature of complex carbon compounds

known as *proteins.* (*c*) A living thing resembles a steam engine as it is adapted to transform matter and energy from one form into another. It is unlike an engine in this respect that it is self-reparing within certain limits. From a physical standpoint it differs from an inanimate system in this that the transformation of energy may be produced in various ways and that the energy of a living thing cannot be so easily dissipated as physical energy. (*d*) A living organism exhibits five everyday activities—(1) Contractility—the power of movement (2) Irritability—the power of feeling in a wide sense; or the power of response to stimuli. The surrounding conditions are always changing and if an individual does not accomodate itself to its environments it soon ceases to exist. (3) Assimilation—The food we take in undergoes a series of complicated changes due to the activity of the protoplasm of the body and is finally changed into the living substance. This is the building up process of metabolism referred to bove. (4) Respiration—This a process of taking in oxygen and giving out carbondioxide. But in case of such lower organisms as yeast cells or even in case of some higher plants the process is not carried out to completion. There may be an intake of oxygen without a corresponding giving out of carbondioxide and vice versa. (5) Excretion—We have referred to the building up process of metabolism. But considering the activities of a living organism it is natura that there must be some wear and tear and hence a breaking down process. The products of the breaking down process are eliminated in the process of excretion.

Besides the above five activities a living organism exhibits a periodic activity of growth and reproduction.

Growth is the natural consequence of assimilation. But reproduction is the most wonderful property possessed by a living organism.

A living organism is capable of giving rise to other similar living organisms. If there be no reproduction life in this world would soon come to an end. The individual dies but the race survives, because the individual is provided with the wonderful power of producing other individuals to carry on the life of the race or species.

Some forms of non-living things resemble the living material very closely. Some crystals grow and reproduce in the most life-like manner. The researches of Dr. J. C. Bose have proved beyond doubt that metals and other inorganic things respond to chemical and physical stimuli just like living organisms. Inorganic matter can be subjected to the action of poisons, and can be cured of its disease by appropriate remedies just like living organisms.

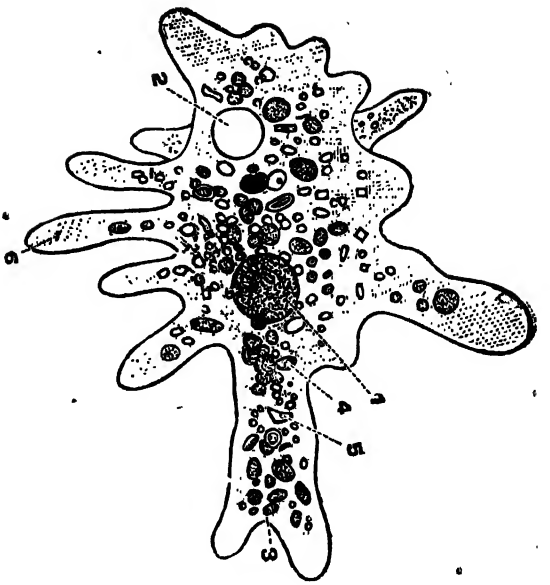
The organisms first evolved were perhaps of unicellular constitution, *i.e.*, each individual consisted of a single cell. All our modern plants and animals have evolved out of this primitive unicellular organism. The evolution of so many varieties of living things from the same ancestor has occupied countless ages. During this period many species of plants and animals have come into being, and have disappeared some leaving their marks in fossil remains. The process of evolution is still going on, and it is probable that after a sufficiently long period of time many of the existing plants and animals will disappear from this earth, and their place will be taken up by new organisms.

REPRODUCTION IN LOWER PLANTS AND ANIMALS

The process of reproduction is not the same in all living beings. In the low scale of life the process is a comparatively simple one.

YEAST CELLS

The yeast is a minute unicellular plant which brings about fermentation. It exhibits a very simple process of reproduction. An outgrowth from the cell appears which becomes detached and forms a new individual, giving rise to others in turn. Sometimes the process is so rapid that the new cell gives rise to another before being detached and this may go on till a chain of cells is formed. Each of these however is an independent yeast plant, and the separation is a matter of time. This process is known as *budding*. In other cases the cell divides into two, each of which by subsequent growth becomes a new individual. This is only slightly different from the first process and is known as *fission*. The unicellular animal *amœba* reproduces by fission. When an amœba is exposed to unfavourable conditions such as the drying up of the surrounding it assumes a spherical form and secretes a membrane round it. An amœba thus encysted can be blown about

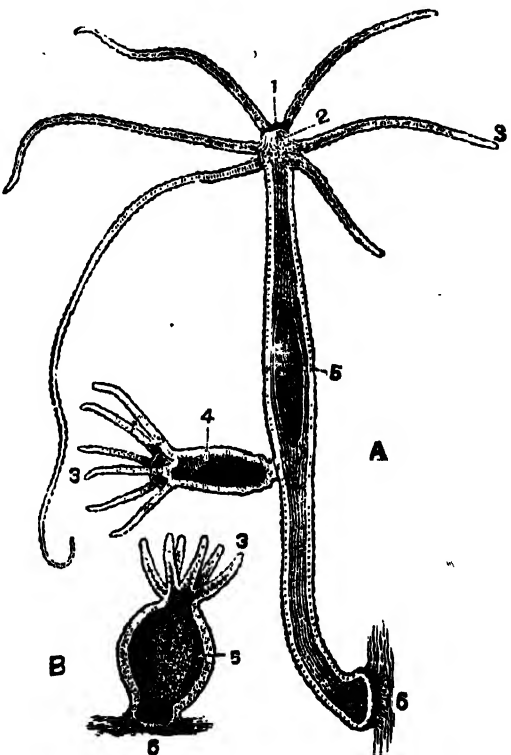


THE AMŒBA

1.—Nucleus.
2.—Vacuole.
3.—Food particles.
4.—Food particles.
5.—Inorganic particles
6.—Pseudopodium.

by the wind like a particle of dust without losing its vitality. In some cases the encysted amœba breaks up into a number of rounded germs which are eventually set free by the breaking of the cyst and each of which takes on the form of a minute amœba. This process is known as ***reproduction by spores.*** In certain plants portions of the parent are detached and develop into the adult forms. In many plants branches frequently become independent by the perishing of the main axis on which they originate. ***Cuttings*** illustrate the same mode of reproduction. A portion of the stem with buds and leaves when separated from the parent and planted in soil will under appropriate conditions put out roots from the cut surface and thus replace the parts missing and lead an independent life. In this mode of reproduction the form of the

plant from which the new one is derived remains unchanged and there is no alternation of generation—a phenomenon to be explained presently. Formation of a new individual by



A.—Hydra in the process of reproduction.
B.—Young Hydra.

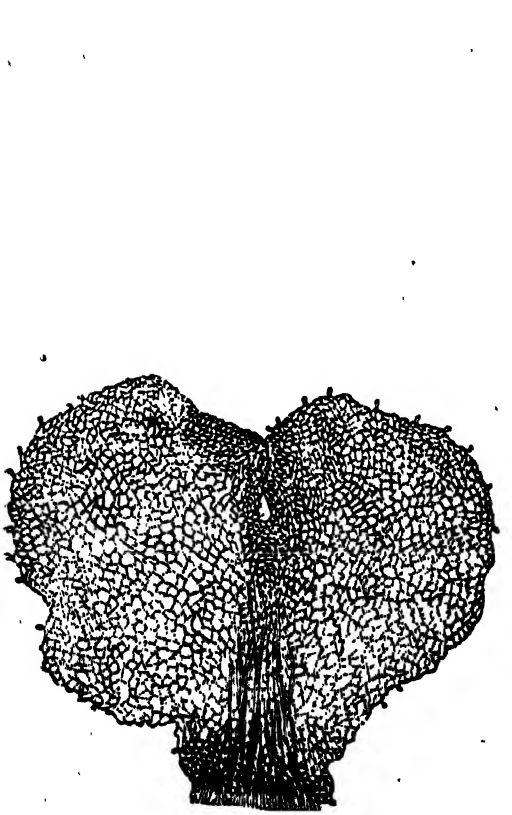
artificial cutting is not limited to the vegetable kingdom The animal known as *hydra* behaves in a very curious manner. If it be divided into two halves each half will grow into a new individual.

REPRODUCTION IN HIGHER PLANTS AND ANIMALS

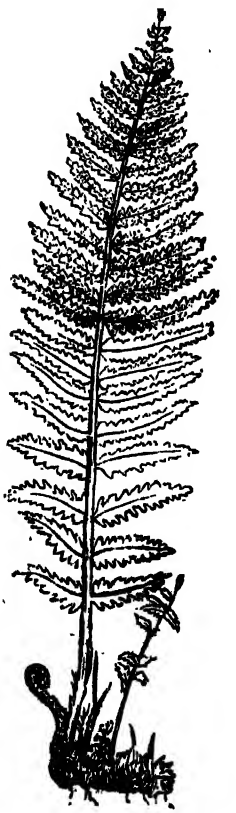
Reproduction by spore formation is very common in plants. Spores may be produced in various ways in different plants but are usually found in special receptacles known as *sporangia*. The individual derived from a spore is said to be produced asexually and may not resemble the parent. Thus in ferns the spore gives rise to an individual known as *prothallus* which is quite unlike the ordinary fern. The prothallus is a little green flattened body about a quarter of an inch in diameter. The prothallus phase of the fern does not produce any spore. It has sexual organs which give rise to reproductive cells of two kinds known as *gametes*. Neither of these can by itself give rise to a new organism but after a process of fusion of two of them, one of each kind, the resulting cell can originate such a development. The form of individual arising from a spore is always a prothallus and that which is developed from the fused gametes of the latter is the new fern. The phase of the plant producing the spores is known as the *sporophyte* and that produciug the gametes is called *gametophyte*.

Some plants produce one kind of spore only and are known as *homosporous*. Others, notably the flowering plants, give origin to two kinds of spores differing very greatly in size. The larger spores are called *megaspores* and the smaller ones *microspores*. Such plants are known as *heterosporous*. In the case of the flowering plants the microspores are commonly known as *pollen grains* and the megaspores as

embryo sacs. The individual or the gametophyte developed from the microspores produces male gametes and that derived from the megaspore produces female gametes. These

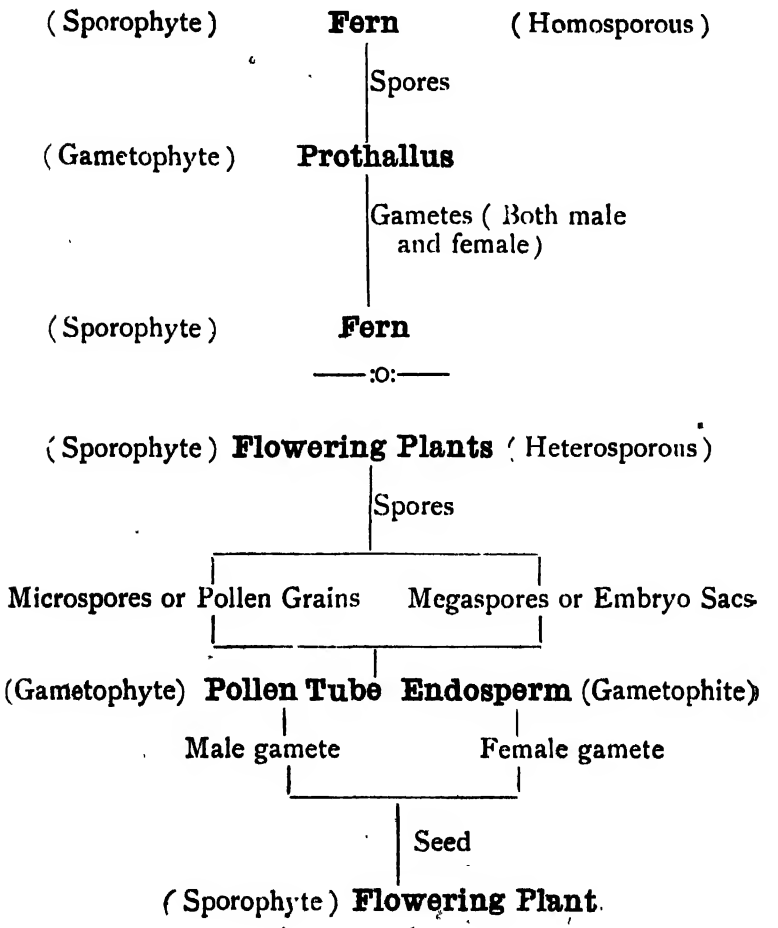


PROTHALLUS.



FERN.

gametophytes do not resemble each other nor do they resemble the parent plant—the sporophyte. The union of the male and the female gametes gives rise to the sporophite.



Among the lower plants the gametophyte is usually the more prominent of the two forms. In the *mosses* the two are almost equal in degree of development. Above the mosses the tendency is to greater development of the sporophyte and retrogression of the gametophyte. In the flowering plants the gametophytes are insignificant in size.

The alternation of the sporophyte and the gametophyte—the asexual and the sexual type—is scientifically known as the *alternation of generation.*

Alternation of generation is not peculiar to the vegetable kingdom. In the animals known as *hydro-medusa* two distinct varieties of individuals are found the hydra and the medusa. The medusa gives rise to an egg which develops into a hydroid person which after a time in turn buds off a medusa. The medusa represents a sexual generation, the hydroid an asexual generation.

Alternation of Generation in the Animal Kingdom.

It has been found out that vegetative and asexual methods of reproduction tend to weaken the species if continued for an indefinite period of time. The germinal capacity gradually dies out and has to be renewed by an act of sexual reproduction. The hydra which lives in water attaching itself by a sucking disc to some solid substance and fishing for its food with its long tentacles, propagates ordinarily by asexual generation. Little polyps spring like buds from its surface and when fully developed, are cast off and become independent individuals. Gemmation continues till the cold weather comes on and threatens the animal with death. Then it gives place to the true generative act. The hydra produces egg-cells (ova) and male germs (spermatoza).

The spermatoza are shed out into the water and eventually some of them reach the egg cells and fertilize them. The fertilized egg cells cover themselves with spiny coats and drop off into the mud ; here they remain through the winter ; in the spring the hard coat cracks and out issues a minute Hydra.

Reproduction in Flowering Plants.

In all higher animals the method of reproduction is sexual and it closely resembles the sexual process observed in plants. In flowering plants the sexual organs are found in the flower. They consist of *anthers* containing the pollen and the *ovary* containing the ovules. The anthers correspond to the testicles of an animal. The *pollen grains* represent the spermatozoa of the male animal and the *ovule* to the egg of the female animal. Conjugation takes place in the following manner : the pollen set free by the bursting of the anther falls open the stigma or end of the pistil which is covered by a viscid sectretion, and becomes attached to it. The pollen swells and from it a tube like process grows towards the ovary. There it impinges upon the ovule and the male gamete which has passed into the pollen tube fuses with the female gamete derived from the ovule. The union of these two cells gives rise to the seed from which a new plant develops.

Harmaphrodite Plants and Animals

The plant as described above contains both the male and female elements and is called bisexual. In the animal kingdom also certain animals like the snail contain both the male and female generative organs. Such animals are known as *hermaphrodite*. Hermaphrodite animals however

are not always self-fertilising. For fecundation the congress of two such animals is necessary so that each may impregnate the eggs of the other.

Some plants are monosexual like the ordinary animal, that is, they contain either the male or the female element only. Fertilisation occurs by the pollen of one plant finding its way to the stigma of another. Wind, insects and other agencies help to transfer the pollen from one flower to another.

In animal while the essential nature of the generative act remains just the same as in plants the accessories gradually rise in complexity. The sperm cells are elaborated in organs called *testicles* and the ovum or the egg is formed by the *ovaries*. Generally speaking the testicles are found to be composed of long and delicate tubes coiled together in a mass. In these tubes spermatoza are found floating in a viscid fluid known as the *semen*. The ovaries resemble the testes in many animals. In the higher animals and man however the ovaries are solid bodies composed of dense fibrous tissue in which the ova or the eggs lie imbedded.

Reproductive Organs in Animals.

The means which nature adopts to effect the union of these sperm and germ cells are very various throughout the animal kingdom. The sexual act seems to be of an involuntary and automatic nature in the lowest animal kingdom in whom there is probably no sexual feeling or sexual effort. As we ascend the scale of being the mind becomes gradually developed and sexual feeling becomes more and more pronounced. In the higher animals besides the essential sexual organs other structures are observed which go by the name

of secondary sexual characters the function of which is to attract the individual of the opposite sex. All the higher invertebrate and all the vertebrate animals are mono-sexual. In them accordingly the union of the sperm and germ cells is effected by sexual intercourse for which nature furnishes a special set of aceessory apparatus known as the copulatory organs.

Reproduction in the earth-worm.

In the earthworm the copulatory organs both male and female take the shape of funnel shaped openings one leading to the testes and the other to the ovary. Like the snail the earthworm is hermaphrodite. During copulation two earthworms approach each other and the spermatozoa pass down the funnel shaped male opening into the female opening of the other. The union of the sperm and germ cells takes place out-side the body and is a very curious process. After copulation the earthworm secretes a fluid from a particular section of its body. This secretion hardens in coming in contact with the air and forms a band round that section of the body. The animal then begins to wriggle out of the band. As the band passes over the male and female openings it carries away with it a certain number of sperm (received from the other individual) and germ cells. At the moment the animal succeeds in wriggling itself completely out of the band the latter closes forming a cocoon. The cocoon lies in the earth as a closed vesicle containing eggs and spermatozoa and it is inside the cocoon that the union between the sperm and germ cells takes place. After a time young embryos are hatched out of the cocoons and take on independent existence.

Reproduction in insects.

In insects and spiders the female has a pouch like organ into which the male deposits the spermatozoa during copulation. The eggs become fertilized before they are laid.

Reproduction in the star fish.

In the animals known as the star fish the ova and spermatozoa are thrown out into the water and unite with each other there. The egg of the star fish is of peculiar interest to the scientists as the researches of Loeb have shown that they can be fertilised and can develop into star fish by merely placing them in saline solution of a particular composition. The importance of Loeb's experiments is very great in as much as they tend to show that reproduction can occur even without the male element in animals in whom under normal circumstances the process is a sexual one.

Reproduction in fish.

The fishes have but an imperfect provision for bringing together the sperm and germ cells. The female sheds her roe in the sand and then the male pours over it his seminal fluid. In this way very many eggs are wasted and hence the enormous number of eggs which many fishes produce. The fishes have only one opening for all ejecta (fæces, urine, semen or egg)—the cloaca.

Reproduction in the frog.

In the frog the eggs devolop entirely outside the body. The frogs have cloaca like the fishes. Copulation takes place during rainy season. The male clasps the female round the waist and remains in this position sometimes for weeks, uttering loud croaks at intervals untill the eggs are discharged. When the eggs are discharged he emits the spermatozoa on to them. The fertilised eggs give rise to tadpoles which develop into the frog.

Lizards, reptiles and turtles lay large eggs which are fertilised inside the body. The copulatory organ consists in the modification of the cloaca. The male lizard has two copulatory sacs situated one on each side on the hinder walls of the cloaca. These when not in use are hollow pouches opening into the cloaca. When in use they are turned inside out and serve to penetrate the female cloaca into which the spermatozoa are deposited. The crocodiles, snakes, and turtles have also got similar appliances. Some snakes do not lay eggs but produce living young ones.

Reproduction in lizards, reptiles and turtles.

In most birds there is no special organ for copulation, the whole of the cloaca being turned inside out for the purpose. In ostriches and some other birds a long penis is observed on the hind wall of the cloaca similar in structure to one of the copulatory sacs of the lizard. The birds show immense varieties of secondary sexual characteristics. The comb of the cock, the singing organs of the male cuckoo (the female bird does not sing), the more gorgeous colouring of the male birds in general are all devices for attracting the female.

Reproduction in birds.

In the mammals the sexual organs attain their highest development. The spermatozoa are produced by the testes and are carried by special ducts or tubes to the *vesiculae seminales* where they are stored up till required. The vesiculae open into a canal called the urethra which takes origin from the bladder and serves to let out both semen and urine. The urethra is continued into the penis which is the copulatory organ and terminates in its external orifice the glans penis. In some

Reproduction in mammals.

animals the testes are situated inside the abdominal cavity and the penis under normal condition remains sheathed and is only protruded during sexual excitement.

In the mammalian female the eggs are produced in the ovaries and are carried by the fallopian tubes into the uterus where the development of the ovum takes place. The uterus communicates with the exterior through the vagina which is the female copulatory organ.

Under sexual excitement erection of the penis occurs and it becomes stiff and capable of penetrating into the vagina. The sensitive nerves on the surface of the glans penis gradually roused by friction to a state of intense excitement transmits this to the brain and spinal cord which by a reflex action cause the contration of the vesiculae seminalis and the seminal fluid is ejected with considerable force into the vagina of the female. The spermatozoa thus deposited in the female passages travel into the uterus and up into the fallopian tubes where union with the ovum takes place.

REPRODUCTIVE ORGANS IN MAN

IN man as in other higher animals the reproductive organs are essentially different in the two sexes.

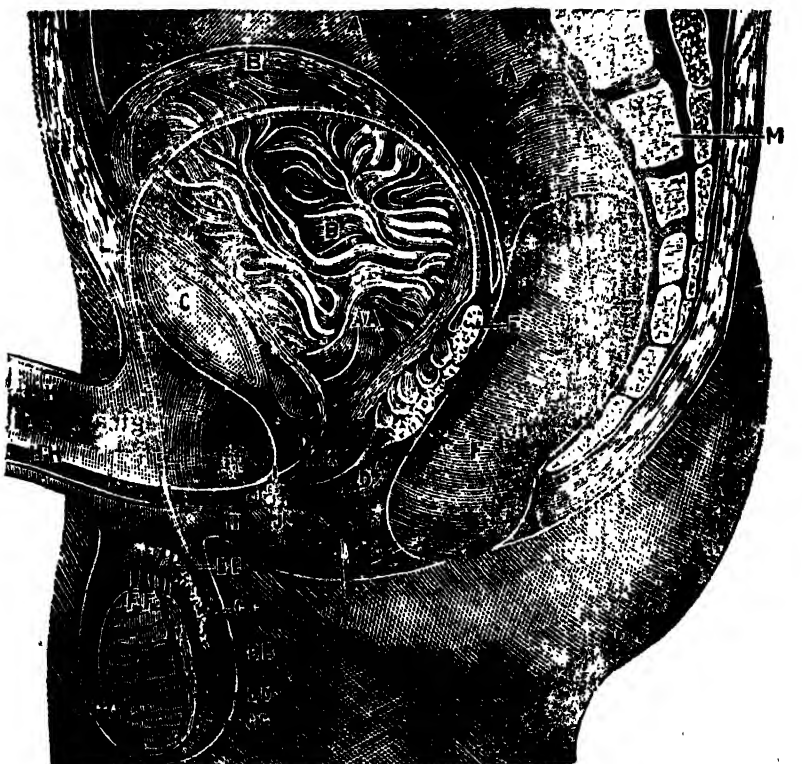
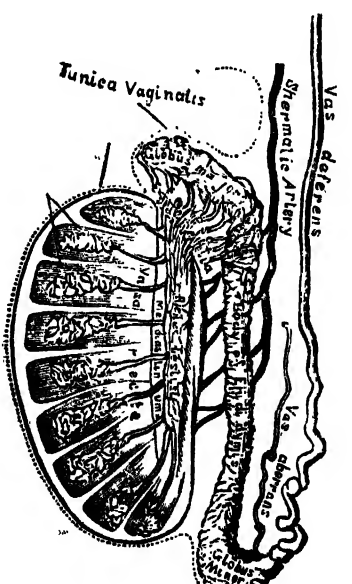


FIG. I. Vertical Section of Male Genital Organs—

A. Peritoneum
B1. Cross Section of Bladder
B2. Mucous Membrane of Bladder
C. Symphisis Pubes.
D. Prostate Gland.
E. Vesicula Seminalis.
F. Rectum
G. Cavernous Body of Urethra.
H. Cavernous Body of Penis.
I. Transverse ligament of Penis
J. Erector muscle of penis.
K. Cowper's Gland.
L. Spermatic Cord.
M. Sacrum.
A A. Orifice of Ureter.
B B. Vas Deferens
C.C. Epididymis.
D.D. Rete Testis
E E. Head of Epididymis.
F.F. Efferent Ducts.
G G Lobules of Testicle.
H H. Urethra, external part
J.J Urethra, Membranous part
I I Urethra Bulbous part.
K K. Urethra, Prostatic part.

Reproductive organs in the male.

In the male the *penis* and the *scrotum* constitute the external organs of generation. The scrotum is of the nature of a sac which is divided into two compartments by internal partition. An external manifestation of this partition is seen in the ridge or *raphe* which runs externally along the mesial plane of the scrotum and divides it in two lateral halves. Each half contains within it a delicate gland known as the *testis* the function of which is to secrete *semen*. Each testis is of a flattened oval form being on the average one and a half to two inches in length, one inch in breadth and an inch and

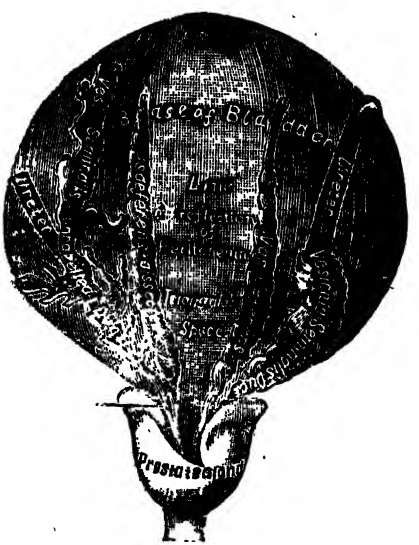


Vert cal Section of the Testicle showing the arrangement of the ducts.

a quarter in antero-posterior diameter, while the weight varies from six drams to eight drams (one ounce). Each testis is composed of a network of very fine convoluted tubes—the *tubuli seminiferi*—throughout which blood vessels are distributed. It is in these fine tubes that the semen is secreted and the male germ cells are matured forming the *spermatozoa*. These tiny tubes join to form other tubes a little larger and finally leaving the body of testis converge into one still larger

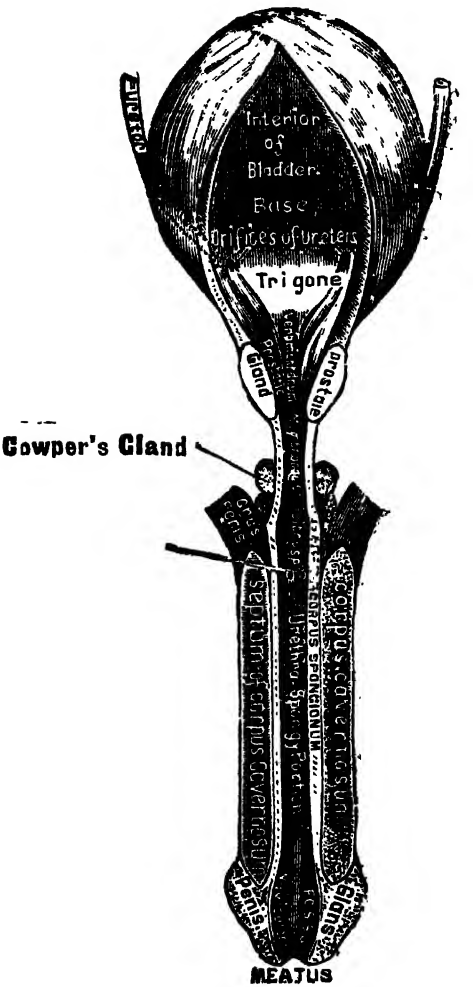
Vertica Section of Bladder, Penis and Uret' r.s.

tube which is repeatedly convoluted or doubled upon itself forming a structure called the *epididymis*. The epididymis partly covers the testis above and borders it behind and can be felt from the outside as a separate lump lying on the testis. The convoluted tube of the epididymis becomes continuous with the *vas deferens*—a tube about the diameter of the lead of an ordinary pencil. The vas deferens enters the abdomen and after a tortuous course winds round the bladder and meets



Base of the Bladder with the Vasa Deferentia and Vesiculi Seminalis.

a duct coming from one of the two seminal vesicles—*vesiculi seminalis* which are narrow pouches about an inch and a half long, in which the semen is stored up so as to form



The Bladder and Urethra laid open Seen from above.

a sufficiently copious discharge. After the confluence of the vas-deferens with the duct from the seminal vesicle the common duct receives the name of the *ejaculatory duct* of which there is one on each side. The ejaculatory duct opens into the *urethra* or the urinary canal at the base of the *prostate gland*. The prostate gland surrounds the urethra just after it leaves the bladder and is nearly an ounce in weight. The prostate secretes a thin fluid, like a mixture of milk and water, which finds its way into the urethra through the *prostatic duct*.

The body of the penis is composed of the two *corpora cavernosa* and the *urethra*. The former are on the upper surface of the penis and constitute its main bulk. They are composed of what is called *erectile tissue* and become firm under sexual emotion.

The urethra or urinary canal commences at the neck of the bladder and terminates in its external orifice, in the glans penis. The head of the penis is called the *glans* or nut. It is covered by a prolonged piece of skin called the *prepuce* or fore skin which can be drawn back in most individuals and helps to preserve the sensitiveness of the glans. Running backwards from the orifice of the urethra is a fold of mucous membrane which is continuous with the prepuce. This fold is called the *frænum præputii*. The base of the glans forms a rounded projecting border the *corona glandis* and behind the corona is a deep constriction, the *cervix*. Upon both of these numerous small sebaceous glands are found which secrete a sebaceous matter of very peculiar odour. The secretion probably contains caseine and becomes easily decomposed.

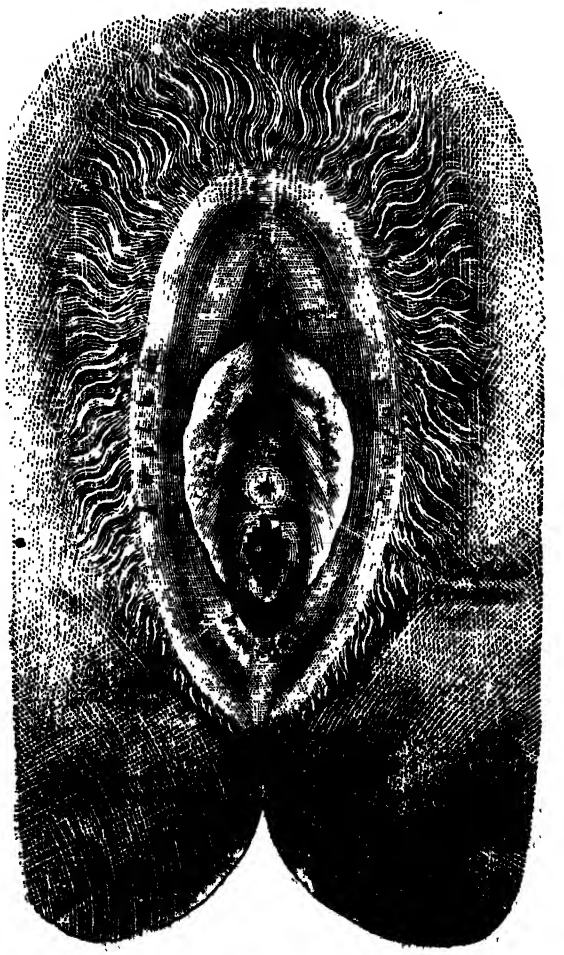
In the female the external parts of the generative system are generally known under the name of *vulva* or *pudenda*.

Reproductive organs in the female.

The rounded oval eminence situated immediately above the vulva is often called the *mons veneris* (mount of Venus). It becomes covered with hair at the time of puberty. This eminence is due to the projection of the pubic bone. The entrance to the vaginal canal is closed by folds of skin and mucous membrane which are known as *labia* or lips. The large outer lips of the vulva enclosing the common urino-sexual opening are the *labia majora*. Each lip or labium has two surfaces—outer and inner. The outer surface is pigmented and covered with crisp hair, while the inner is smooth. The space left between the anus and the point of meeting posteriorly of the labia majora is known as the *perineum*. The perineum sometimes ruptures during child birth. Within the *labia majora* are a pair of smaller inner lips the *labia minora* guarding the entrance to the vagina. At the point where the labia minora meet anteriorly is to be found the *clitoris*—an erectile structure similar to the corpora cavernosa of the penis in the male. Its body is short and lies concealed beneath the labia. Its free extremity is a small rounded tubercle of spongy erectile tissue and highly sensitive. Between the clitoris and the entrance to the vagina enclosed on each side by the labia minora, is a triangular smooth surface known as the *vestibule*. It usually extends about half an inch below the clitoris.

Opening into the vestibule is to be found the urethra. It is a short membranous canal leading from the neck of the bladder. The urine passes out of the body through this channel. The female urethra is only about an inch and a half in length.

Stretching across the lower part of the vaginal opening in virgins is a thin membrane known as the *hymen*. The hymen



The Vulva. External Female Organs of Generation.

is usually ruptured during the first sexual intercourse but it may be also torn from other causes.

The *vagina* is a muscular membranous canal connecting the womb with the exterior. It is about three inches and a half long and is very distensible so as to admit the passage through it of so large a body as the child. Its inner surface is characterized by folds of the mucous membrane presenting many transverse ridges. Normally the walls of the vagina remain in apposition so that it looks more like a slit than a canal.

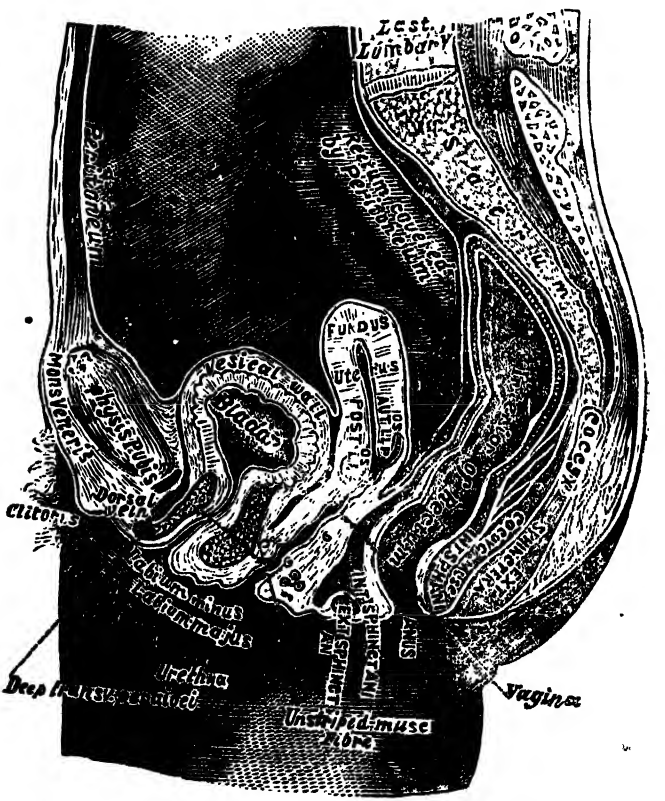
The vagina leads up to the *uterus* or womb which opens into it at its upper or anterior side. The unimpregnated womb is a small flattened pear-shaped body about 3½ inches long and 2½ inches broad. The broad end is uppermost and the lower end rests on the vagina. It is a hollow muscle like the heart and its contractions are not dependent on the will.

The upper and broadened part of the womb is called the body or *fundus* and the lower which is narrower is called the *cervix* or the neck.

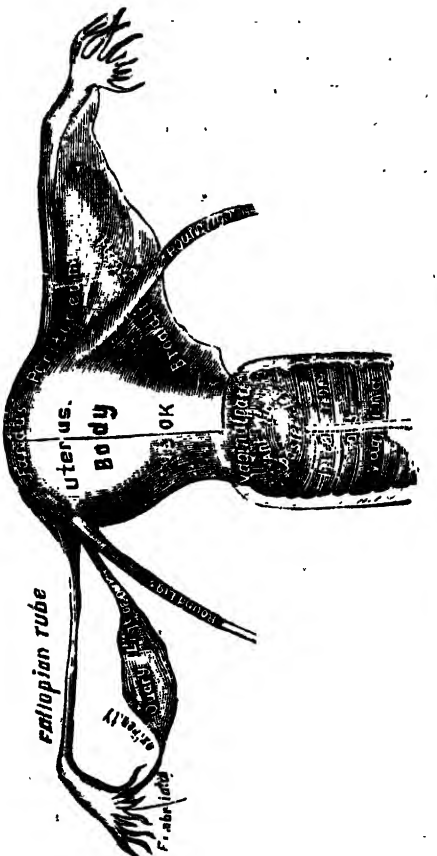
The *cervix* or neck is the part which rests on the vagina and in the middle of it is a small opening leading into the womb, called the *os uteri* or mouth of the womb. It is so narrow as only to admit a small sound. The womb contains two little cavities, one of them in the body and the other in the neck. Between them there is a narrow passage called the *os internus* or internal mouth. The immediatly external opening into the vagina is called the *os externus* or external mouth of the womb.

Attached to each side of the upper end of the uterus are the two *fallopian tubes*. They are about four inches in

length, and their general direction may be said to be outward, backward and downward. They are normally about the size of a slate pencil the canal through the centre being very tiny. The fallopian tubes are not united to the ovaries but are provided with a bellshaped mouth which receives the egg discharged from the ovary.



Vertical Section of the Female Genital Organs.



The Uterus and its Appendages—Anterior View.

The *ovaries* or germinal glands are perhaps the most important part of the female generative system since it is in them that the egg or ovum containing the germ of the

new life is developed. The ovaries are analogous in function to the testes of the male. The ovaries are about an inch and a half long, three quarters of an inch in width and about one third of an inch thick. Inside the ovary are numerous vesicles called *Graffian follicles* in which the ova are contained and developed. The fluid contained in the interior of these vesicles is transparent and albuminous. Each follicle contains a single *ovum* or egg of about $\frac{1}{200}$th of an inch in diameter. In each ovary there are several hundred ova.

The physiology and development of the reproductive organs in man.

The generative organs in both sexes are the last in the body to arrive at maturity. They are quite immature at birth and it is not till the epoch of puberty that they become fully developed. The development of the sexual organs is not a sudden process as many believe but is the result of a series of gradual changes which have been going on from the moment of the formation of the embryo.

At birth the sexual organs of the child are generally believed to be functionally inactive. It has been however recently found out that besides the formation of ova and spermatozoa the sexual organs (the testis and the ovary) have other important duties to perform in the human economy. The growth of the child, its intellect and the development of all the higher faculties depend on the healthy state and the proper development of the sexual organs. The sexual organs of the child can thus be said to be functionally inactive only as regards generation. It is believed that the testis and the ovary secrete something—as an internal secretion—which is taken up by the blood and is indispensable in maintaining a proper bodily and mental health.

Development in the male.

In the male child the penis is of comparitively small size at birth. The glans penis (or nut) remains covered by the prepuce or fore-skin. There are a number of secreting glands on the margin of the glans penis. They secrete a material known as the *smegma.* This is a kind of sebaceous secretion, semisolid in consistency and yellowish white in colour. It has a very offensive smell in the adults. It is also found in children and its accumulation sometimes leads to irritation and inflammation. In some obstetrical cliniques it is the custom to expose the glans by forcibly withdrawing the prepuce immediately on the birth of the child. It is claimed that by this means the risk of any phimosis is avoided. The newborn babe does not feel much pain in this procedure as the sense of pain at this stage is very imperfect.

In a certain small percentage of cases one or both the testes are found to be absent on examining the scrotum. Such persons are called *monorchids* (when one testis is absent) or *cryptorchids* (when both the testes are wanting). In these cases the testes are not actually absent but are found to be undescended or only partially descended from their original seat in the abdomen behind the kidneys. During normal development a strand of muscle fibre known as the *gubernaculum testes* draws down the testis into the scrotum from behind the kidneys.

If the scrotum of a child be watched for sometime or if the skin over the inner side of the thigh be gently stroked with the fingers the scrotum will be found to exhibit contractile movements. The same movements are also observed in the case of adult persons and are caused by the contractions

of a layer of thin muscular tissue underneath the skin of the scrotum. Under the influence of warmth or in the case of old or debilitated men the scrotum becomes elongated and flaccid but if bathed in cold water or in the young and robust, it is short, corrugated and tightly clinging.

As the child grows older the development of the sexual organs proceeds slowly. Vague sexual sensations and feelings may arise either spontaneously or as a result of faulty surroundings in the child even as early as the third year. The handling of the genitals affords a peculiar pleasure to the child at this stage and unless checked by proper training often forms the starting point of the masturbating habit in later life. The state of nakedness produces a peculiar intoxicating effect on the child. When the clothings are removed the child laughs, jumps about, strikes its abdomen and indulges in all sorts of erratic movements.

The testis and the prostatic gland may begin to secrete as early as the sixth or seventh year but there is no natural or spontaneous discharge. Ejaculation however can be brought about by artificial means such as masturbation. Spermatozoa are always absent from such discharge and they are seldom found in semen before the age of puberty.

The psychical sexual apparatus before the onset of puberty remains comparatively undeveloped as there is very little sexual attraction towards members of the opposite sex. Exceptions are however frequently observed.

Training and environment are very important factors in the development of the sexual organs. Artificial stimulation of the sexual feeling in childhood invariably leads to a premature development of the sexual organs. In such cases

the bodily and the mental vigour of the child suffer. The importance of a proper sexual training in childhood cannot be overestimated.

Development in the female.

In the female child at birth the sexual organs are immature like those of the male child. The hymen is placed very posteriorly and can be seen only by wide separation of the thighs. The genital canal is also more vertical than in the adult. Secreting glands are seen between the folds of labia majora and labia minora and secrete smegma. As the female child grows older the genital canal becomes more horizontal and the development of the parts pushes the hymen more anteriorly. The evolution of the sexual instinct takes place as in the male child. *Ovulation* does not generally occur till after the commencement of menstruation but cases are on record where pregnancy has followed coition before menstruation has been established.

Puberty

Shortly after the conclusion of the permanent dentition (the wisdom teeth excepted) the occurrence of puberty marks the begining of a new phase of life, and the difference between the sexes hitherto merely potential now becomes functional. The progressive development of the sexual organs which has been hitherto going on rather slowly now proceeds at a very quick pace. The cause of this comparitively sudden change has not yet been determined. It is surmised that some internal secretion is responsible for this rapid growth. In both sexes the changes occurring during puberty have for their aim the maturation of the generative organs. The bodily changes however are much more obvious in the female than in the male. The boy does not become a man till some years after

puberty; on the other hand with the occurrence of menstruation the girl almost at once becomes a woman.

The age at which the changes of puberty occur differ in different individuals and in different races. High living and erotic surroundings tend to hasten its onset. The average age in India is about twelve. In the European countries it is about fourteen. In very cold countries the onset of puberty may be delayed as late as the sixteenth year.

The period of puberty.

In India the male child usually attains puberty at the age of about twelve. At this period the testes begin to secrete semen in greater quantities than heretofore and microscopical examination reveals the presence of active spermatozoa. The appearance of active spermatozoa in semen is the most important sign of puberty. A larger supply of blood and nervous influence is sent to the sexual organs and they grow rapidly. Hair appears in the pubis, axillæ and also in the uppper lip and chin. In the male the larynx becomes wider and the voice deeper and rougher and fresh vigour and energy pervade the whole frame. Even in the male during this period—pressure over the nipples produces a sensation of pain. At the time of puberty there is a general deposition of fat in the subcutaneous tissues.

Puberty in the male.

Simultaneously with these bodily changes the mind also undergoes a marvellous development. Higher mental attributes such as benevolence, magnanimity, piety, sense of duty, ambition etc. are evolved at this time of life. The psycho-sexual apparatus also shares in this general development and sexual desires towards the opposite sex are awakened and become very powerful; while in the male involuntary emissions

of the seminal fluid with erection of the penis occur at times during sleep accompanied, it may be, with amatory dreams and showing the maturity of the sexual system.

Puberty in the female.

In the female puberty occurs in India generally between eleven and thirteen years of age. In the European countries the average age is between fourteen and sixteen. As in the male, an increased supply of blood and nervous influence is sent to the sexual organs and they rapidly acquire their full development and begin to exercise a most powerful influence over the rest of the constitution, physical and moral. The sexual organs grow in size and hair appears on the mons veneris and the pelvis and the breasts enlarge. When the organs are fully developed and the ova are ripe there commences that wonderful chain of periodical action known under the name of menstruation. Menstruation is determined by a periodical flow of blood to all the sexual organs so that the vagina and vulva have a dark red hue instead of their usual pink one. At the same time blood is discharged from the cavity of the womb and escapes from the external genital fissure in drops. This is called the menstrual discharge and lasts for three to five days amounting to about as many ounces. Menstruation occurs about once in a month. The general increase in the roundness, fullness, and grace of the female body after puberty is due to the deposition of subcutaneous fat.

Menstruation.

The onset of puberty in the female is characterised by a wonderful process known as menstruation. This consists in the periodic flow of blood from the genitals. This flow occurs at intervals of about 28 days or once each lunar month and may last from three to five

days or sometimes more. The cause of this periodic flow is not definitely known. Many believe that it is associated with ovulation or discharge of ovum. The discharge of ovum is analogous to the laying of eggs in birds and other animals. The human egg (ovum) however is a microscopic object and measures only $\frac{1}{200}$ inch in diameter. Although it is quite probable that the congestion which occurs in the ovaries and other pelvic organs about the time of menstruation favours the rupture of the graffian follicles and consequent discharge of the ovum, no definite relationship between menstruation and ovulation has yet been recognized.

The changes which are generally observed during the time of menstruation may be described as follows :—

Sometimes before the onset of the period, the subject feels vague pains over the loins and lower extremities. There is sensation of fullness also in the breasts accompanied, it may be, with some pain. Some psychological disturbance may also be observed during this time. Vaso-motor changes manifested by hot flashes, chilliness or feeling of fullness and oppression in the head are sometimes prominent. The mucous membranes of the uterus, vagina and even other pelvic organs become congested. Examination at this period shows that the normal pink colour of the vagina is replaced by a dark red colour and the parts become sensitive. The increase of congestion finally results in the rupture of the superficial blood-vessels of the uterine mucous membrane resulting in the discharge of blood. The blood mixes with the mucous discharge from the vaginal wall and appears as the menstrual flow. The acid nature of the vaginal discharge prevents the blood from clotting. Minute particles of the membranous

lining of the womb are also passed out. The total quantity of discharge varies from four to six ounces. The flow, which may last from three to five days is dark in colour at first and gradually becomes paler.

Reproduction in Man.

The fertilization of the ovum of the female by the spermatozoon of the male is the most important factor in the process of reproduction. As a result of this fertilization the germ cell or ovum commences to grow and this phenomenon is known as pregnancy. After about nine months the development of the ovum is completed and delivery takes place. The phenomena of pregnancy and parturition will be discussed more fully in a latter chapter.

The union of the sperm and the ovum is not left to mere chance but is guided by a powerful natural instinct called the sexual instinct. The fertilization of the germ cell takes place as a result of sexual intercourse which is determined by the feeling of sexual excitement.

SEXUAL EXCITEMENT

Nature, to bring about the union of spermatozoon in man with the egg (ovum) in woman, makes man the victim of what is called sexual excitement.

Bodily changes during sexual excitement—

(1) The conjunctivæ become injected.

(2) The eye balls become more prominent.

(3) The pupils dilate.

(4) The sebaceous glands become more active.

(5) There is an increase in the frequency of the heart beat.

(6) The arteries supplying the genital organs dilate and there is an increased flow of blood into these organs.

(7) The venous spaces of the male penis and the female clitoris and nipple become gorged with blood and enlargement and erection of these organs take place.

(8) The contraction of the muscles of the penis takes place.

(9) The prepuce which normally ensheathes the glans becomes retracted during erection.

(10) The prostate and Cowper's glands begin to secrete freely and after the excitement has persisted for sometime secretion from these glands trickles out from the urethra in the shape of a colourless sticky fluid which when rubbed between the fingers becomes whitish in colour. This secretion is nature's provision for lubrication.

(11) In the female this lubricating secretion is poured out by the numerous glands lining the entrance to the vaginal canal and the mucous membrane lining inside. This female secretion is somewhat more viscid than the similar secretion found in the male and has the characteristic of turning white when rubbed between the fingers.

Mental changes during sexual excitement—

1. A peculiar mental attitude which serves to maintain the excitement and rouses the desire for intercourse.
2. A seeking for company of one of the opposite sex.
3. An impulse in the male to play the aggressive role while the female remains more or less passive though exceptions are very frequently observed.
4. A state of what may be called semi-insanity. Inhibitions which have been imposed by the cultural development or civilisation break down in part during the period of excitement and the individual often behaves in a way which he would be ashamed of in any other time. Judgment and moral sense may suffer during the excitement. The lover often acts like a fool and a madman.
5. There is also a desire for bodily contact of certain kinds other than ordinary intercourse.

The influences which bring about Sexual Excitement—

Nature might not care in making us play the pranks of a mad fool and undergo all the bodily and mental changes that take place during the sexual excitement, but we may not in our saner moments like to become the victims of sexual excitement when unnecessary. It is proper, therefore, that we

should keep in mind the various causes that bring about sexual excitement.

1. The nerves which control the sexual organs take origin from the spinal cord which is the centre of all reflex movements. Anything which lessens our control over the reflex mechanism should be avoided as far as practicable.

This reflex mechanism relating to the sexual organs may be disturbed in various ways.

(*a*) Lying on the back in some persons determines a flow of blood to the spinal centre with consequent erection and sexual excitement. This position during sleep is a frequent cause of night pollution.

(*b*) The rubbing of the genital and surrounding parts or any other kind of friction may cause sexual excitement.

(*c*) Irritation due to accumulation of smegma.

(*d*) Irritation caused by skin diseases.

(*f*) Irritation caused by worms.

(*g*) Irritation of the urethra.

(*h*) Irritation of the bladder owing to calculi.

(*i*) Distension of the bladder with urine—owing to this cause night pollution sometimes takes place during the latter part of the night.

(*j*) Distension of vesiculae seminalis with semen.

(*k*) Irritation of the rectum. This may be owing to hæmorrhoids or owing to constipation.

(*l*) Irritation of the prostate.

(*m*) Sucking of the nipples.

(*n*) Pressure in the mammary glands.

2. The brain controls the reflex activity of the spinal cord. The brain may cause or inhibit sexual excitement.

(*a*) A clear consciousness of impossibility of sexual gratification permanently abiding in our subconscious mind strongly inhibits sexual excitement. This is a principal factor which explains why no sexual excitement takes place in case of certain relatives.

(*b*) Loathing of the possible object of love inhibits sexual excitement.

(*c*) Fear inhibits sexual excitement.

(*d*) Consciousness of possibility of sexual intercourse tends to cause sexual excitement. Public women of attractive appearance therefore tend to cause sexual excitement.

(*e*) Licentious thoughts originating in the brain are very powerful factors in causing sexual excitement. The sexual passion is the strongest passion in human nature. It works in both the conscious and subconscious planes; by association, everything connected with fair females becomes dear to the males. Many advertisers take advantage of this weakness and in their pictures they exhibit female forms. To a weak mind any part of the female body, or representation of the same in picture or sculpture, or anything connected with female such as any ornament or any part of dress may suggest libidinous thoughts. The sex is a dominating factor in human adornment to a great extent. As ornamentation is to a great extent a factor in sex attraction, no

wonder that specific female ornaments and articles of dress may in many cases tend to cause sexual excitement.

Reading of love poetry and love literature is a principal factor in keeping up sexual irritation in the subconscious plane which often emerges also into conscious life.

SEXUAL LIFE

The Sexual life of an individual may be conveniently divided into several periods :—(1) The period of infancy (2) the period of childhood (3) the adult life (4) the middle life and (5) the old age. By the term infancy is meant the first year of life. The period of childhood commences from the second year and ends with the appearance of the signs of puberty *i. e.* about the twelfth year. The adult life commences with the appearance of puberty and ends with the beginning of decline of sexual activity. In the middle life the sexual activities though declining are still present whilst in old age they have ceased to exist altogether. The division of sexual life into the above five periods is more or less arbitrary as the natural evolution of the sexual life is a continuous process and no sharp line of demarcation can be drawn between the different periods.

Sexual Life of the Infant.

To many the phrase sexual life of the infant, will seem to be a contradiction in terms. The popular idea is that sexual life begins only after the attainment of puberty but numerous recent investigations have shown that sexuality exists even at infancy and exerts a profound influence on the life of the infant. In fact sexual life begins with the embryonic life and the period of infancy is marked by distinct manifestations of the sexual instinct. These sexual manifestations, however, are of a different nature from those of the adults and they are of importance, in as much as they form the rudiments of the future sexual life of the individual. Even at this early age the infant may

receive sexual impressions which may have a lasting after effect.

An important school of modern psychologists believes that most of the higher qualifications of an individual are really secondary sexual characters and that they are evolved out of the primitive sexual instinct. They hold that love, affection, valour, sympathy, piety, artistic sense, poetic imagination all owe their origin to the sexual instinct; that the energy of man, his courage, his enjoyment of work and life, all, with hardly any exception depend on his sexual power.

If castration (removal of the testis or ovary) be performed during the period of infancy, the intellectual as well as the physical development of the child suffers. The growth becomes stunted and the intellect is dulled. Even when placed under the most favourable surroundings such a person will grow up into an individual who is but a poor specimen of humanity and his works, though executed with talent and spirit, will always bear the stamp of impotence.

The proper training of an infant is a matter which deserves the most careful considerations. He must be carefully protected from all sorts of undue sexual influences. It has been shown that passionate caresses by the parents, when constantly indulged in, tend to awaken the sexual instinct quite prematurely. The seduction of infants by ignorant nurses and servants is an occurence more common than one is inclined to believe. A crying infant can be soothed very easily by manipulation of its genitals and illiterate attendants very often indulge in such practices. Needless to say that this premature stimulation of the genital organs can produce nothing but harmful results.

Sexual Life of the Child.

As the infant gets older, its peculiar sexual traits become more and more manifest. As early as the second year a distinct difference between the conduct of the male and the female child can be observed. The male child is generally more aggressive and indulges in rough plays and frolics, on the other hand the female child is generally of a quieter disposition and loves to play with dolls etc. Of course education and surroundings play a certain part in determining these predilections. Early in the child life certain regions of the body assume a definite sexual importance. These regions are called erogenous zones. The areas near about the genital regions when stimulated will produce erection in a child. In some children stimulation of the anal and gluteal regions such as occurs in scratching or flagellation gives rise to voluptuous sensation. In the first stage of childhood the sexual impulse remains undifferentiated and the child may be attracted towards persons of either sex but later on with the progress of mental evolution sexual attraction towards members of the opposite sex becomes more and more pronounced and the homosexual tendency undergoes gradual retrogression till it is entirely suppressed in normal individuals. The child's sexual inclination may assume various forms. It seeks every opportunity of seeing, of being in close proximity to, of touching and of kissing the beloved person. Thus many a boy takes part in the common sports solely because the girl whom he loves is one of the players. Kissing is one of the leading manifestations of sexual desire and another is the wish for close proximity to and for embracing the beloved person. The object of love may be very much older than the child. Not infrequently indeed children

are really troublesome to adults in their desire for close physical contact.

Among children the desire to wrestle with one another is sometimes determined by a sexual motive. A child sometimes endeavours to imitate the beloved person in every detail. The development of the psychical and the physical manifestations of the sexual instinct does not go hand in hand. Very often one of these components becomes more developed than the other and the boy or girl may love a person of the opposite sex without feeling any sensation in the genital organs or conversely the organic sensations may be experienced without the idea of love. The idea of love and the organic sensations may be present in the same individual without being correlated with each other. The fusion of these two components of sexuality takes place as the age of puberty is approached. Investigations have shown that erotic dreams are sometimes observed in children of quite tender age and that they are very common in older children nearing the age of puberty. Of course these dreams are generally not accompanied by any ejaculation as very little semen is secreted before puberty.

As has already been mentioned the sexual instinct of the child exerts a powerful influence in moulding the character. Hence too much stress cannot be laid on the importance of a proper sexual education of the child. It is extremely easy for the child to be led astray as regards sexual conduct by impure examples or evil companionship. A child has got the primitive sexual instinct (though not in a marked degree) without those controlling influences which are the result of education. Young children should be protected from

conditions, sights and talks of a nature calculated to stimulate subconsciously their sexual life. If a child is to be trained healthily it must receive only good and happy impressions. At the same time it is true wisdom to be quite open with enquiring open minds on so-called 'awkward' subjects. The fashion of evading such questions by fictional answers is as much to be deprecated as secrecy in which the exercise of normal functions is enwrapped. It is quite natural for the growing child to ask questions as to how his baby brother has come to this world and if this natural curiosity is not satisfied the child is sure to coin an explanation himself—an explanation which might subconsciously affect his psychical development later on. The untruths sometimes offered by mistaken modesty are sure to bear sour fruit, sooner or later. Erroneous explanations shake the confidence of a child in his mother's veracity. Why not begin to tell the truth in a form graduated to young intellects? A mother's attitude in these circumstances is very important. If she is self-conscious and uncomfortable, then self-consciousness and a sense of shame are instilled into the child questioner; but if she defers the question to a suitably private time and then answers it simply and calmly, a confidential attitude is initiated which will make her better able to befriend her child in after years. Every mother should feel it to be her duty to educate her children, boys as well as girls in sexual matters. The grown up children are sure to hear about sexual matters from their playmates and various other sources and if left unguarded they may readily succumb to temptation. If they have been forewarned by the mother they would be ready to confide in her and to meet temptation in a way which would be

impossible if she had shirked facts in their early years. The confidence between mother and child is of immense value in the later period of childhood. It is a time of rapid development and change manifested in various ways. With the greater functional activity there is greater demand upon the nervous system and the child should be prepared beforehand for this. **Girls should have the menstruation process simply explained before it occurs and boys should know that involuntary nocturnal emission is ordinarily a normal physiological affair and is in no sense a disease.** Very often these manifestations of puberty come upon the unguided boy or girl as a tremendous shock and the result is sometimes truly deplorable. The unfortunate victim feels ashamed to confide his or her troubles to the parents and guided by the literature issued by quack medicine vendors comes to regard the normal physiological phenomenon as an incurable disease. This false apprehension continuously acting on the mind brings about a state of mental and physical debility which it takes a long time to cure. The teaching of physiology and biology invested with the cold atmosphere of science, is of great value in aiding and supplementing the sexual education of children. Friends cannot be actually chosen by the parents but they can encourage suitable acquaintances and make intimacy difficult for undesirable or silly ones. The right kind of friends, the right kind of books and the right interests go a long way towards completing the careful early work of the parents and the mutual understanding and confidence existing between the parents and their children will preserve the latter from many a pitfall in future life.

The example and behaviour of the parents themselves exert a profound influence on the mind of the child. Most parents are careless in their talk and behaviour in the presence of their little children little dreaming that by such conduct they stimulate the subconscious sexual activity of the child. Too much stress therefore cannot be laid upon the removal of the child at an early age from the parents bedroom, the necessity for careful selection of attendants and the provision of separate beds in the nursery sleeping arrangements.

The question of sexual *vice* in children will be disscussed in a later chapter.

Sexual Life of Adults.

The onset of puberty determines the complete development of the sexual impulse. Simultaneously with this the organs of generation increase in size and become functionally active. The individual begins to experience erection and becomes sexually excited under the influence of appropriate psychic and organic stimuli. Erotic dreams with or without emission become frequent about this time.

The intensity of the sexual impulse is very marked during and after the period of puberty and to relieve the tension the desire for sexual intercourse becomes predominant. Even those who have not been seduced at an earlier age in many cases learn to masturbate about this time even when kept away from corrupt influences.

In the lower animals sexual activity is characterised by a periodicity which is wanting in man. It is only during certain seasons of the year that sexual intercourse is indulged in by the animals. At other periods there is no sexual feeling

present. In the human species however there is a constant secretion of the sperm by the testis which is stored up in the vesiculae seminalis. The filling of the vesiculae leads to the production of a sexual tension. Nature then provides a proxy for the function which should relieve the tension, in an analogous crisis or orgasm of the sexual organs during sleep. Sometimes however nocturnal emission fails to relieve the tension in consequence of which a state of erethism ensues, which provokes instinctive reflex manipulation of the organs, just as in parts that itch, eventually inducing a regular orgasm.

Difference in the sexual activity of Man and of the Lower Animals.

In a majority of cases the opportunity for lawful sexual intercourse does not occur until long after puberty. Under these circumstances the desirability or otherwise of sexual abstinence is a question of very great practical importance as society considers and justly too any sort of irregular sexual connection in the light of a sin. In viewing this question there are two points which will require elucidation, viz., (1) Is absolute continence injurious to health? and (2) Is absolute continence practicable? We shall try to answer these questions here.

Abstinence.

Is absolute continence injurious to health? :—

By absolute continence is meant abstinence from any kind of sexual gratification whether natural or artificial. The Hindu idea of Brahmacharya enjoins abstinence from sexual indulgence in all times, in all places and in all conditions—whether bodily, mental or in words.

Absolute abstinence for limited periods of time is certainly without any injurious effect on the system, but the question

becomes more difficult to answer where abstinence for prolonged periods or for lifetime is concerned. There are persons in whom there is not much difficulty in suppressing any sexual desire that might come up in the mind. In these cases life long abstinence can be practised without any untoward effect on the health. In a majority of cases however the sexual impulse is not so easily controlled and even when voluntary repression is successful erotic dreams occur at night accompanied with ejaculation. Needless to say in such cases sexual continence cannot be considered absolute. Involuntary nocturnal emission is nature's method of relieving undue sexual tension in those in whom sexual passion finds satisfaction in mind or works in the subconscious region vigorously. There are a very large number of individuals who get occasional nocturnal emissions and who can lead an otherwise continent life for prolonged periods without suffering in health. In them any outbreak of sexual impulse in the waking state can be checked by proper hygienic and open air life, physical exercise, good company and good books. Many individuals resort to severe physical exercise to escape from the manifestations of the sexual instinct. But abnormal excessive physical exercise is not good. While moderate physical exercise is beneficial, it must be distinctly understood that any kind of physical overstrain is injurious to the organism and should be strictly avoided. In a certain number of individuals involuntary nocturnal emission is insufficient to relieve the state of sexual tension. In them there is a craving for some sort of voluntary sexual gratification either in the shape of normal sexual intercourse or masturbation. In such cases the strictest measures fail to suppress the ever increasing demand

for sexual satisfaction and ultimately a train of nervous symptoms appears which renders the individual unfit for any serious work. The patient complains of headache and lassitude ; inability to fix the attention for any prolonged period of time, the temper becomes peevish and irritable, occasional attacks of mental anxiety attended with palpitation may occur and the patient is troubled with insomnia, want of appetite and constipation with all their attendent symptoms. Such cases of excessively developed sexual instinct require special consideration in each individual personal case.

In actual life every gradation in the intensity of the sexual feeling is met with and in order to decide whether abstinence would be harmful or not, every individual case should be considered on its own merits.

Is absolute continence practicable ? :—

From what has been discussed above, it will be at once apparent that absolute sexual continence according to the definition given above is not practicable by all persons.

Night-pollution is a form of sexual indulgence and that happens in the case of many persons who have not ordinary sexual intercourse.

The physiology of the sexual glands during the period of abstinence has not yet been thoroughly worked out. One theory which is shared by some medical men also is that during abstinence the semen is reabsorbed into the system and goes to strengthen the vigour of the brain and other organs of the body.

But Vecki-an American authority on sexual matters, says "To me this theory of reabsorption of semen is comparable to the notion that a cold can be caused by the absorption of

sweat, which Hebra, in his lectures ridiculed whenever an occasion arose." It is possible that sperm once formed will, if it is not expelled in any of the usual ways, at first hinder and finally stop the production of new semen. It would be interesting to know what becomes of this stored up semen. The only chance for clearing up this question would seem to be an autopsy of persons who, after long continence have died suddenly ; but such an opportunity would seldom be offered.

There is a great diversity of opinion as regards the minimum age at which sexual intercourse is permissible. Since under normal conditions sexual intercourse is likely to be followed by pregnancy and child-birth, a very large number of factors have to be considered before this point can be settled. Leaving aside sociological factors and considering the subject from the point of view of health alone we have to take into account the three following considerations :—

Minimum age at which sexual intercourse is permissible.

(1) Minimum age at which an individual is capable of enjoying sexual intercourse without injury to his constitution.

(2) Minimum age at which a girl is fit to bear the strain of pregnancy and child-birth.

(3) Minimum age of the parents which will conduce towards the production of a healthy offspring.

We shall consider these three factors separately.

I. Minimum age at which sexual intercourse may be indulged in without injury to the constitution :—

It should be clearly understood that even in a fully developed adult sexual indulgence might produce harm if carried

to excess. What we are concerned here is a moderate amonnt of enjoyment. The prevalent idea among the laity and also among not a few medical men is that sexual indulgence is harmful until the ossification of the skeletal system is complete. According to the advocates of this view twenty-five years is the minimum age limit for sexual enjoyment. This doctrine is based upon a misconception that the development of the sexual organs follows that of the osseous system. Following this line of argument in its entirety we should logically wait till we are forty before sexual intercourse would be permissible as the xiphoid appendix does not ossify until at that age. Observation shows that the sexual organs are fully developed long before the age of twentyfive and indeed in some females the breasts—which are secondary sexual organs—may show distinct signs of decline at twentyfive years of age. Some observers claim that this is a result of premature sexual activity but the same thing is observed even among unmarried females leading continent lives. Recent investigations have shown that masturbation—within moderate limits—even when practised by quite immature children is not (in all cases) so much harmful as has been generally believed. In the case of those who have reached the age of puberty masturbation *within very moderate limits* in many constitutions does not seem to produce any apparent harm. Now as there is nothing to show that normal sexual intercourse is more harmful than masturbation, we are forced to admit that moderate sexual intercourse does not produce any injury to health after the age of puberty.

But it should be remembered that sexual passion is a very strong passion. The capacity of controlling easily sexual

impulse is a highly valuable virtue. This capacity or power of self-control requires to be formed, developed and strengthened by practice. The period just after puberty is the best period for forming and developing this power of self-control. Unless this power of self-control be developed, one may run the risk of excessive self-indulgence. Considered from this standpoint even for the sake of mere health only, a general rule of postponing for sometime sexual indulgence after puberty, is desirable in the case of the males.

In the case of females however there is another factor to be considered. In young girls although masturbation might not produce any injury normal sexual intercourse with an adult male might be harmful owing to disproportionate size of the male organ.

2. Minimum age at which a girl is fit to bear the strain of pregnancy and child-birth :—

Now as under normal circumstances sexual intercourse might be followed by pregnancy the effect of the latter on the mother's health will have to be taken into account in considering the age restriction. Conception does not generally occur before menstruation has begun and although the female might conceive immediately after the attainment of puberty it does not follow that she is fit to bear the strains of pregnancy and child-birth. The minimum age at which a female is fit to bear child without injury to her constitution has been differently fixed by different observers. Recent statistics and observation, made by certain German scientists tend to show that no untoward results happen if the female conceives two years after the onset of puberty. Of course individual health and constitution play a great part in all cases.

3. Effects of the age of the parents on the offspring :—

No experimental data are available in the case of human beings as regards the influence of the parental age on the health of the offspring. In India the physical inferiority of certain races has been attributed to the prevalence of early marriage among them. No scientific proof of this is however forthcoming and this is a question which is well nigh incapable of being proved as so many factors influence the health of a race or a community. While it would be dogmatic to assert anything definitely it would appear that the male is generally capable of procreating healthy offspring from four to five years after the onset of puberty while in the case of female the procreation age might be a year or two earlier. Here also individual health and constitution play a part the importance of which should not be underestimated.

Frequency of sexual intercourse.

The importance of the question of frequency of sexual intercourse in practical life is very great but unfortunately on this question there is as much diversity of opinion as on any other that can be named. The frequency with which sexual intercourse can be indulged without damage to one or both parties depends of course on a number of circumstances *e. g.*, constitution, temperament, occupation, habits of exercise, period of life etc. There are persons who indulge in daily sexual intercourse without feeling any the worse for it and on the other hand there are persons in whom sexual indulgence once a month is found to be amply sufficient. Twice a week would seem to suit the requirements of the majority. For the newly married thrice a week is not too much if the parties concerned be of sound health and proper age.

There cannot be any hard and fast rule as to the best time for sexual intercourse. It must be distinctly understood that in the majority of cases the accomplishment of sexual intercourse is followed by a feeling of langour which must not be disregarded. Rest for some time should always be taken immediately after the completion of the sexual act and as night affords the best time for rest this period should generally be chosen for the sexual act. Sexual intercourse during the day time is not harmful by itself if one can get sufficient rest afterwards.

Best time for sexual intercourse.

Although the attitude adopted for sexual intercourse is mainly a matter of individual taste and inclination it is best to avoid all those postures in which one or both the parties have to maintain a strained attitude. It should be remembered that the vaginal canal is directed upwards and backwards and this has to be taken into account in the selection of a particular position, otherwise much injury might be done to the delicate structures of the female organs. Cases are on record where 'fracture' of the penis has occured as a result of selecting an unsuitable posture. In the female such injuries might produce contusions and lacerations and in rare cases might even lead to peritonitis.

Position for sexual intercourse.

There are certain conditions which may render a sexual indulgence undesirable. A very large number of diseases results from indiscriminate sexual indulgence. We mention below a few important circumstances in which abstinence would be desirable.

When should sexual intercourse be avoided.

Ill health :—

Sexual intercourse should be strictly avoided during all forms of illness of either party. It is generally found that all sexual desire is absent during conditions of ill health. Such however is not always the case. In the acute stage of gonorrhoea sexual desire is sometimes very marked and indulgence might result in serious injuries to both the parties. Those who suffer from contagious or venereal disease like syphilis or gonorrhoea should abstain from sexual intercourse till they are thoroughly cured. Among the sufferers from venereal disease are a very large number of innocent victims who have got their infection from their partners in life.

Unwillingness of the partner :—

For the successful performance of the sexual act both the parties must be in a proper frame of mind. The unwillingness of the male partner renders the performance of the act absolutely impossible as there cannot be any penetration without erection. Unwillingness of the female however is no bar to the act but still it is best to abstain from intercourse when the female partner is unwilling as such an act besides being an outrage on the sentiment might sometimes produce physical trouble in the shape of pain, vaginismus etc.

Menstruation :—

It is the custom of many races to consider the woman unclean during the catamenial period and to abstain from sexual intercourse with her during this time. It is believed that sexual relations at the menstrual period are very dangerous for both man and woman ; in man urethritis might follow and in the case of woman menorrhagia might supervene. However probable these assertions might seem they have not

yet been definitely proved by scientific observations. Even apart from its possible effect on health considerations of cleanliness, sentiment and delicacy should prevent us from conjugal relationships during the menstrual time.

Pregnancy :—

Many authorities advise the discontinuance of sexual intercourse during the latter months of pregnancy. According to modern obstetrical surgeons however sexual intercourse during the period of gestation does not produce any harm if it be conducted gently without any undue violence.

Puerperium :—

After the delivery of the child the discharge of blood and serum from the genital passages continue for some days, constituting what is called the lochia. Sexual intercourse should be avoided during the period the lochia persists. It takes about one month for the lochial discharge to cease and for the uterus to return to its normal condition, after which sexual intercourse may be indulged in. In some persons the uterus takes a longer time in coming to its normal state and harm might follow in a too early renewal of the conjugal relationships. Sometimes when the mother is weak in health it is wise to withhold from all sexual connections for a much longer period of time so as to avoid the risks of another pregnancy before the full recuperation of health.

Sexual Intercourse and Pregnancy.

Every act of sexual congress does not necessarily result in pregnancy. It is impossible to say definitely beforehand whether a particular act of sexual union would be fertile. For pregnancy to occur the spermatozoon from the male must meet the ovum discharged by the female. The male generally

discharges innumerable spermatozoa with his semen during each sexual act and each living spermatozoon has got potential fertilising capacity. As far as it is known the discharge of the ovum by the female has got no relationship with the sexual act. The female discharges only one or at the most a few ova per month and the factors that condition this discharge are not at present well understood. The bursting of a Grafian follicle of the ovary delivers an ovum which is caught by the fimbriated end of the fallopian tube. The ovum then slowly travels along the fallopian tube and reaches the uterus from whence it is extruded though the vagina along with the vaginal discharges. Conception might result if a spermatozoon meets the ovum anywhere between the fallopian tube and the uterus. If there be no ovum in the genital passages during the time of sexual intercourse pregnancy does not usually result. The spermatozoa however can remain active inside the female passages for a few weeks and if during that time any ovum happens to be discharged impregnation might follow. The general congestion of the pelvic organs that occurs about the time of menstruation favours the rupture of the Grafian follicles hence intercourse during the period immediately preceeding or following menstruation is likely to be most effective for fertilization. Sexual intercourse during menstruation is generally ineffective as the spermatoza are likely to be washed away by the catamenial flow. During the period of lactation menstruation is generally absent and there is an idea among the laity that pregnancy does not occur at this time. This idea is entirely unsupported by fact and numerous cases are on record in which pregnancy has followed intercourse during the lactation period. Sexual

union with girls in whom menstuation has not yet commenced has sometimes resulted in pregnancy.

Sexual Life of Middle Aged Persons

The sexual vigour of an individual like all other developmental processes undergoes decline after having attained a maximum. The age at which this retrogression begins varies in different individuals and in the two sexes. It is earlier in onset in the female than in the male. The female generally loses her procreative power at about the age of fifty while in the males it lasts for a much longer period.

The first signs of sexual decline observable in an individual consists in the lessening of the sexual desire so that the demand for sexual gratification becomes progressively less and less. In the female at about the age of forty five the process of retrogression becomes somewhat rapid. Menstruation stops; the ovary begins to shrivel, soon reaching the size and acquiring much the appearance of a peach stone. A few months later it is still more shrunken, and after the cessation of the menses it often becomes so shrivelled as to be scarcely recognizable.

Menopause.

At the same time that the ovaries are undergoing this remarkable degenerative change, a similar change is taking place in the other organs of generation. The uterus also diminishes in size, as does also the vagina. The mouth of the womb becomes contracted and after a time entirely closed. The upper part of the vagina is sometimes contracted to such a degree as to produce fold closely resembling those which results from serious inflammations about the uterus. The breasts also diminish in size. These changes constitute

menopause and indicate unmistakably the decline of the function of reproduction preparatory to its entire suspension.

As a rule, the capability of procreation ceases with the cessation of menstruation, but this is not uniformly the case. Instances are on record in which pregnancy has occurred even after the disappearance of menstruation. The sexual desire generally persists even after the menopause and indeed it may be temporarily increased at the commencement of this period. Menstruation usually ceases somewhere between forty-five and fifty years but cases are recorded in which menopause has occurred at much earlier and much later periods.

As at the establishment of the function it is attended with a certain degree of irregularity, so also at the conclusion.

Disturbances during Menopause.

There seems indeed, to be a remarkable correspondence between the morbid conditions affecting the two termini of a woman's sexual activity. If the function is ushered in with great irregularity, its conclusion will generally be found to be attended with the same phenomena. One very singular circumstance is the fact that a late puberty indicates a short rather than a long menstrual life.

The period of menopause is one of the most critical epochs of a woman's life and the disturbances which are observed last from a few months to several years. The average period from the time when the first irregularities are noticed to the entire cessation of the menstrual flow is about two to five years.

The degree of disturbance observed during this period is exceedingly variable. Much depends upon the condition of

the system when the period is reached. A woman who comes to this critical epoch of her life with a constitution unimpared by fashionable dressing or dissipation or by excesses of any kind may hope to pass through it safely and quickly, avoiding the numerous dangers which at this time beset the pathway of her sister who has recklessly ignored the demands of nature and the dictates of reason in respect to the care of health. A woman who has all her life been feeble, a sufferer from "female weaknesses" of various sorts, will find this period a veritable "Pandora's box" of ills, and may well look forward to it with apprehension and foreboding. It is well, indeed, if being forewarned, she begins in time to correct the various faults of habit and regimen which have a direct or indirect tendency to increase the perils of the approaching crisis. A proper preparation for this eventful period will do more to mitigate its sufferings and hasten it to a happy termination than all the prescriptions which can be compounded by the most skillful physicians.

As a rule the first indication of the approach of menopause is irregularity of the menstrual flow, either in time, or in quantity or in both. In exceptional cases there is a sudden cessation of the flow there being no return of the function even in a slight degree. The most common mode of termination however is a gradual diminution of the flow until it ceases altogether. Sometimes a profuse flooding terminates the function, and in other cases a succession of such floodings occur. With some women the flow is alternately scanty and profuse for a few months before it wholly ceases, while with others the quantity is normal but the time either shortened or lengthened or irregular in both ways until suspension occurs.

Other symptoms besides those immediately connected with the function, almost invariably mark the approach of this epoch and characterize its continuance. There is in almost all cases a decline in health more or less marked in degree. The strength is diminished and in many instances there is loss of flesh as well. The appetite is capricious and morbid, as at the begining of period of menstrual activity. Various disturbances of the stomach, bowels, bladder and even kidneys are to be noted. Cutaneous eruptions often occur, particularly a form of acne of the face. The patient perhaps complains of the symptoms referring to the heart, also the lungs and other vital organs, all of which are found on examination to be of a purely reflex character. The expression of face often changes in a marked degree and sometimes there is a distinct growth of hair on the chin or upper lip.

Nervous Symptoms during Menopause.

By far the most noticeable symptoms are those which refer to the nervous system. The neuralgias, nervousness, fidgets and hysterias which afflict some women at this period are such as to render life miserable. Flushings are among the most constant of the symptoms referable to the nervous system. A sudden rushing of blood to a part, accompanied by excessive heat and violent throbbing, renders the patient really wretched by its frequency. Any part of the body may be affected, but the head or face and neck are the favourite seats of the affection. The phenomenon is precisely the same as that of blushing, and indeed this may be said to be a sort of "pathological blushing." The sudden afflux of blood to any part may occur as often as several times an hour, or may

be as infrequent as half a dozen times a day. The paroxysm usually lasts not more than ten minutes, and is succeeded by a profuse perspiration, which relieves the surcharged blood-vessels of their repletion. When the heat is not succeeded by the perspiration, it is familiarly termed 'dry flushing.'

Sometimes nausea and vomiting accompany the flushing, as does invariably a feeling of weakness and malaise to which the patient should yield herself, securing quiet and repose until the equilibrium of the circulation is restored. Sometimes the congestion of the head becomes so intense as to make apoplexy imminent and indeed cases of paralysis have occurred at such time in a few instances.

Another unpleasant complication of these attacks is the intense mental excitement which is very frequently observed. This excitement sometimes amounts to delirium or mania. Profuse perspiration, sometimes so copious as to saturate the bed clothing is also a common symptom of this condition. These may follow a 'flushing' or may occur independently. They are most apt to occur during sleep. They follow also mental or nervous excitement almost invariably.

Sensation of a foreign body in the eye is often experienced at this period. Lachrymation and conjunctivitis are also frequent. Halo in front of the eye, dimness of vision are more common in women during menopause. There are often glaucomatous changes in the eye, pain in the forehead and hardness of the globe of the eye. Often cupping and atrophy of the optic disc are noticed by ophthalmoscopic examination. Primary optic atrophy is also common without any glaucomatous change.

Eye changes.

Other general symptoms occur with greater or less frequency and prominence, as general debility, chlorosis, biliousness, headache, pain in the back and bowels, hæmorrhoids or piles, diarrhœa, constipation, dropsy, bloating of the face, swelling of the hands or feet, frequent fainting, irritation and swelling of breasts, neuralgia or rheumatism of joints, leucorrhœa, pain in chest with or without cough, nettle rash, water brash, incontinence of urine, numbness in limbs, prickling sensation in hands and arms, epilepsy, fits of laughing and crying, irritation of the rectum, various hæmorrhages—as from nose, stomach, varicose veins and even skin, boils, pealing of nails, falling off of nails, toothache, neuralgia of vulva, itching of vulva, inflammation of vagina, sciatica and unnatural drowsiness.

Other symptoms.

The great liability to the formation of morbid growths at this time is also a prominent feature of the pathology of the menopause. This applies particularly to polypi and fibroid growths of the uterus. Cancer must be mentioned as one of the morbid conditions which frequently chooses this as the favourable moment for it to establish itself.

Mental symptoms are the most frequent disturbances during the period of menopause. Often there is an entire and most remarkable change in disposition. A kind patient mother or forbearing, confiding, exemplary wife becomes irritable, unreasonable and suspicious. Her natural modesty may even give place to wantonness in extreme cases, and the mother's instincts may become so thoroughly obliterated as to give place to an almost uncontrollable desire to the lives of her little ones. The once happy woman becomes despondent, moody and

Mental symptoms.

taciturn. She avoids company, has no taste for amusements, and spends her time in watching her varying symptoms, and bewailing her real and imaginary woes. In many cases, actual insanity, usually of a temporary character, fortunately, is the result of the profound disturbances which the system undergoes at this time.

Hygiene of the menopause.

The best way for a woman to prepare for the crisis is to live healthfully and physiologically in matters partaining to dress, diet, exercise etc. If this has been done from early childhood happy will be the transit through the stormy sea of the climacteric; but if the reverse has been the case there are dangerous breakers ahead. On the appearance of the first indication of the approaching change, the woman should be relieved of all taxing cares and should be placed under such circumstances as to secure quiet, and mental and physical repose. She must have plenty of fresh air and the diet should be amply nourishing and varied but unstimulating. Strong tea or coffee and alcoholic stimulants should be avoided. An occasional warm bath will be found exceedingly soothing to the irritable nerves. Sponging the spine alternately with hot and cold water once or twice a day, ten to twenty minutes at a time, will be found of special service also. For inflammation of the genital organs a warm vaginal douche is of great value. Warm sitz baths are also of advantage and may be recommended for use in most cases. To relieve the 'flushings' of the face and head no remedy works so promptly as hot sponging of the congested parts and hot fomentations of the spine. The same principle applies when other parts of the body are affected as well as the head.

For the profuse sweating, hot salt sponging, at a temperature as high as can be borne, is an excellent means of treatment. If not successful equal parts of alcohol and water may be used instead. Special ailments should receive special treatment advised by a competent physician. If the patient is a married lady the question of the marital relations during this change has got to be considered. In some cases there is an unnatural excitement of the sexual desires at this epoch. Absolute sexual continence during this period has been recommended by some but considering all points it is best to allow the patient normal sexual gratification taking care to avoid all excesses.

Sexual decline in the male.

In the male although there is no sharply defined period like the climacteric in the female, still during the corresponding period of life some disturbances are observed closely resembling the disturbances of menopause. The temperament changes and various nervous disorders may make their appearance about this time of life. Neuralgic pains and neurasthenic states are of pretty common occurrence and there may be a temporary increase of the sexual desire.

In the male there is not much anatomical change observable in the generative organs. The testis continue to secrete although less actively up to a very late period in the male and cases are on record where a centenarian has procreated children.

The sexual life of middle aged persons should be guided by moderation. Excess which is to be avoided at all times is likely to produce disastrous results at this time of life. The decline of the sexual powers under normal circumstances

goes on slowly. The sexual act can be performed less and less frequently and it requires more and more of an incitement to reach the final orgasm. The individual is thus led to seek artificial stimulation which produces more harm than good and often leads to excesses. A normal enjoyment of the sexual life has always a favourable influence on the general health and the frequency of sexual intercourse in middle aged persons should be such as to provide gratification to the normal instinct. In this respect individuals differ and what may be considered as excess for one individual may be within the normal limit for another.

Sexual Life in Old Age.

The energy of all the bodily functions diminishes with the advance of age. It is almost an universal law of nature that those functions which develop last in an individual are usually the first to undergo decline and sexual development is no exception to the general rule. Old men are thus impotent as a result of natural decay and yet there are very old persons who can still accomplish something remarkable in sexualibus.

The difference in sexual virility among old people depends more on the condition of the body than on the number of years. Outward appearances however are very often deceptive and we may see old persons whose bodies have preserved all their forces but the sexual. The opposite condition is but seldom seen with the exception of those pathological cases where in decrepit old men, there is a sexual impulse quite out of proportion. There are perfectly vigorous old men as there are also quite decrepit young people. The autopsies of old men show that even octogenarians may have well developed spermatozoa which howevr does not prove that they are virile, but only that they may be so. After all sexually vigorous old men are exceptions, because the functional capacity of the sexual organs generally begins to diminish with the fiftieth year, continuing to decrease until the sixty fifth year, when it generally becomes extinct.

Dr. Vecki in his book on Sexual Impotence says:—

"As the greatest individual differences prevail in this respect, it is quite impossible to set a fixed time for the

begining of physiologial senile impotence. Nor is it possible to determine in every case why such or such an individual has grown impotent in early life while another is still perfectly vigorous at an advanced age. It is noticed that in some families a premature impotence and in others a tardy extinguishment of the sexual powers is, so to speak, hereditary. Some individuals who have been healthy and strong all their lives remain sexually vigorous to a good age. Again other individuals are seen who have always used with prudence their sexual power and possess otherwise the requisite qualities, preserving their manhood o an advanced age. Too frequent excesses, especially in onanism in youth, and overcareful husbanding of the sexual power are the greatest enemies to the preservation of virility. It is extinguished earliest in individuals in whom it has never appeared with impetuosity, and who on account of the feeble desire, have acquired renown for virtuousness. It disappears latest in those who may now and then have given rein to their impetuous impulse, but without going in their enjoyment beyond a reasonable measure—who have, in a word, given off at all times only what they could easily spare.

Normally the extinguishing of the sexual power takes place gradually the act can be performed less and less frequently, and while the erections may be quite vigorous at times, it requires more and more of an incitement to reach the final orgasm. I was repeatedly consulted by old men who claimed that desires and erections were satisfactory, but ejaculation of semen could be obtained only with great effort or not at all. In such cases the advice must be hygienic life in every respect, improving of bodily conditions,

and safe husbanding of the remaining sexual ability. Only a superficial observer will be surprised at seeing one individual quite impotent when old, after having solicitously spared his sexual power all his life, and another, known as an epicurean, who still possesses a certain degree of sexual vigour in spite of his advanced age. Medical science must not be unfair toward such exceptions, which are frequent enough. It must not thoughtlessly follow the dictum of the past, and deny them every sexual power together with the right to make use of it. I am well aware that these old veterans will not care for the well-intended but strict prohibitions of too scruplous medical authorities. I know they will all the same put into practice their right as much as possible and I will frankly oppose my opinion to those scruples and say that old people run no risk in satisfying sexual wants.

Of course I am not including here those pathological cases of an increased or reawakened sexual impulse in old age after it had become extinct. I am speaking here only of preserved sexual vigour in advanced age. I believe that satisfying real sexual wants can be but advantageous to old age as it constitutes to stimulate the energy in the assimilation of material; it buoys up and makes the heart rejoice; it helps to keep up cheerfulness which is generally reduced in old people, and therefore may properly be considered as a means of favouring longevity.

As to those cases in which death occurred soon after some old gentlemen had entered into married life, or those cases of sudden death before, during or after coition, nothing is proved by them since we hear every day of persons dying slowly or suddenly without having thought of marriage or of sexual

intercourse for a long time past. Again, we also see men rejuvenated by the side of young wives and living to an advanced age. At any rate, those old men who are still in possession of a good remainder of their sexual power have a better prospect of a long life than those who in decrepit state are condemned to a virtue which is not always voluntary.

Modern authors are begining to conform to these ideas. Edward Martin for instance knows of one man who at the age of seventy-eight has begotten a child, and who states that his erections are as vigorous as in youth and that he performs the sexual act frequently and satisfactorily. This man's powers are possibly kept alive by his marriage with a young and vigorous woman."

Although we have quoted Dr. Vecki to show what an American authority says, it looks well if an old man do not seek to any pleasure from sexual indulgence but so trains himself before setting in of old age as to enable him to reap highest pleasures by cultivation of his intellectual and religious nature and in deeds of sympathy, love and charity find his happiness in the happiness of others.

From the point of view of mere health, in the old age it is better to err on the side of abstinence from sexual indulgence than on the opposite side. We would advise every old man in India to abstain entirely from sexual indulgence subject to certain exceptions.

FERTILISATION

Semen.

The semen is the product of the male genital organs and consists of a mixture of secretions of the testes, the prostate, the vesiculæ seminalis, the Cowper's glands and the urethral glands. The quantity of semen ejaculated during each copulation varies within wide limits. It may be anything from 0·5 to 6 cubic centimeters. The ejaculated semen is a thick, viscid, colourless, opalescent fluid resembling boiled starch in appearance. It has a peculiar characteristic odour which is compared to that of chestnut blossoms or newly sawn bone. The odour is supposed to be due to the presence of spermin which is a product of the prostate. Some authorities however consider that the odorous substance is derived from the testes. The alkalinity of the semen comes possibly, from the secretion of the prostate, the colour from the admixture of the secretion of the vesiculæ seminalis and the gluey consistency from the secretion of Cowper's gland. On exposure to the air the semen loses its viscid character aud becomes more fluid in consistency. When examined under the microscope it shows spermatozoa, granules, cells and epithelia from the prostate and urethra. Each spermatozoon shows three characteristic portions viz., a head, a middle piece, and a tail. The preseence of spermatozoa determines the ferlizing power of the semen. In the freshly ejaculated semen the spermatozoa are seen to exhibit constant movement being propelled by their tails. If the semen be preserved under favourable conditions some of the spermatozoa may be seen alive even at the end of forty eight

hours. They are killed by urine and acid vaginal discharge. Heating above 47°C and freezing below 15°C kills them. Diihrssen found spermatozoa in the female sexual organs motile even after three weeks and a half. Water destroys motion after an hour at the latest.

The seminal liquid is heavier than water, soluble in water and acids and coagulable by alcohol. Vanquelin's chemical analysis is as follows :—

Water . . .	90 per cent.
Organic substance, mucin .	6 „
Earthy Phosphates . .	3 „
Sodium Choloride . .	1 „

Fertilization of the ovum.

Every act of coitus does not lead to a fertilization of the ovum. Whilst at every copulation the male discharges innumerable spermatozoa the female discharges a very limited number of ova (one or two) every month. The discharge of ovum unlike that of the spermatozoa in the male does not occur during the sexual orgasm and it is only under exceptionally favourable circumstances that fertilization can occur. Fertilization is absolutely independent of volition.

The site of fertilization.

We have seen that ejaculation forces the semen into the female genital passages but how and where the spermatozoa meet the ovum has not yet been satisfactorily explained. It is held that the mouth of the uterus opens during the orgasm to admit the entrance of the semen into the uterus whilst others again assert that the motile spermatozoa gain entrance into the uterine cavity being propelled by the movements of their tails. The onward journey of the spermatozoa does not cease even when they reach the

uterus and it is believed that some of them travel up the fallopian tube up to its fimbriated end and may even reach the abdominal cavity. When the normal unfertilized ovum is set free from the graafian follicle of the ovary it traverses the fallopian tube, passes into the uterus and is thence expelled. "In view of the many curious and unexplained phenomena with which the process of fertilization is surrounded, it is not very difficult to consider that there is a natural attraction between the ovum and the spermatozoon, which tends to bring them together. If the spermatozoon meets the ovum in the uterus, fertilization occurs there. If the spermatozoon reaches the uterus before the ovum, the same tendency will draw it into the tube to meet the ovum. If the ovum has not yet entered the tube the spermatozoon may reach the fimbriated extremity, or even pass into the peritoneal cavity, The fertilized ovum will then, under normal circumstances, continue its course to the uterus, where it becomes embedded."

The early ovum.

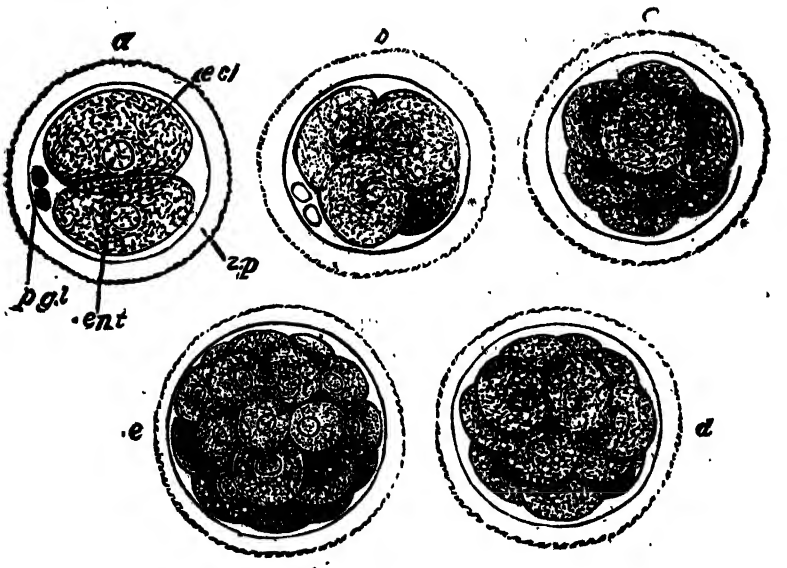
Before fertilization the human ovum is a small spherical cell with a diameter of about 0·2 millimetre. The ovum possesses externally a limiting membrane, which is known as the zona pellucida. Within this is contained the proper substance of the cell—the yolk or vitellus. When examined under a high power of the microscope, a number of radiating lines may be seen traversing it, which are supposed to indicate the presence of minute canaliculi and this appearance has gained for it the alternative name of zona radiata. The vitellus is a yellowish semi-fluid substance of an albuminous nature. Within the vitellus and usually eccentrically placed there is found a large nucleus

surrounded by a delicate limiting membrane. Within the nucleus is the nucleolus or the germinal spot.

After the ovum has attained maturity, either before or immediately after its expulsion from the Graafian follicle, certain important changes take place in it, without the occurrence of which fertilization can probably not take place. These changes consist in the extrusion of a portion of the nucleus and they commence by a contractfon of the vitellus, with the result that the latter separates from the zona radiata and leaves a distinct perivitelline space containing a clear fluid. At the same time the nucleus migrates towards the periphery of the cell and divides into two parts. One of these parts is expelled into the perivitelline space while the other part again divides and a half is again extruded; the remainder which is now termed the female pro-nucleus and represents one quarter of the original nucleus gradually returns towards the centre of the vitellus whence it awaits the spermatozoon. The two parts of the nucleus which have been expelled are known as the polar globules. Their ultimate fate and their significance is unknown. It is possible that by this removal of certain constituents of the female nucleus a more equal transmision of characteristics from both parents is assured.

Fertilization.

If impregnation occurs, numerous spermatozoa cluster around the ovum either during the process of expulsion of the polar globules or shortly alterwards. One of these, probably the first to approach the ovum, strikes the surface of the membrane with its head, and at the point of contact a small elevation forms. Through this the spermatozoon gradually bores its way into the cell.



z. p. Zone pellucida.
p. gl. Polar globules.
e. et. Epiblastic cell.
e. nt. Hypoblastic cell.
a. Division into two spheres.
b. Stage of four spheres.
c. Eight spheres, the epiblastic cells partially enclosing the hypoblastic cells.
d, e. Succeeding stages of segmentation.

When the sperm cell has completely penetrated into the vitellus the tail gradually ceases to vibrate and ultimately disappears, while the head and the middle portion form a small spheroidal corpuscle—the male pro-nucleus. The male pro-nucleus moves towards the centre of the cell in the direction of the female pronucleus and finally they come into close contact with one another.

A brief period of rest follows upon the fusion of the male and the female pro nuclei; and then the process of segmentation commences. The ovum first divides into two cells and then each of these again rapidly divides into two more. This process repeatedly occurs untill a cluster of cells is formed. This group of cells which now constitute the human embryo goes on increasing in size by repeated division and subdivision of the constituent cells. By modification in the structure of the cells and their arrangements the embryo gradually comes to assume the human form. The exact details of these changes are too complicated to be described here and constitute a separate branch of study called embryology.

The fertilized ovum in which segmentation has already commenced gradually travels along the follopian tube and reaches the uterine cavity and attaches itself to the mucous membrane of that organ. It then rapidly eats its way into the substance of the uterine mucons membrane which closes over the ovum obliterating the opening through which it passed. The embedded ovum continues to grow till the full term of pregnancy when delivery takes place.

THE CHARACTERISTICS OF THE FŒTUS AT THE DIFFERENT MONTHS

By the end of the second week the length of the ovum is nearly a quarter of an inch. By the end of the third week

First month.

the rudiments of brain, eye and ear can be distinguished and the amnion—the membrane which envelops the fœtus—is formed. By the end of the fourth week the mouth and anus are formed, the limbs become pronounced and the heart which appeared towards the end of the second week has become larger.

At the end of the second month the ovum is about the

Second month.

size of a hen's egg. The nose begins to assume its normal shape. The lower jaw and the collar bone begin to get form.

At the end of the third month the fœtus measures from three to three and a quarter inches in length and weighs a

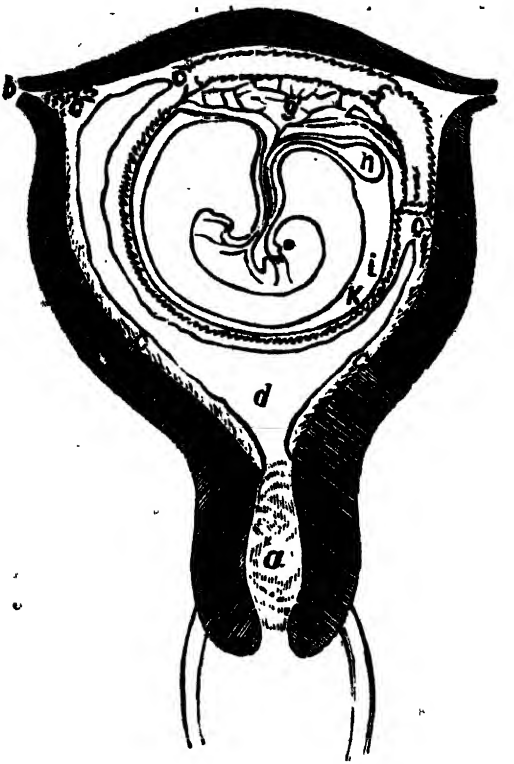
Third month.

little more than three ounces. The placenta has become formed. Nails have appeared; the neck has formed and the genital organs begin to assume a characteristic male or female form.

At the end of the fourth month the fœtus is about five inches in length—one quarter of the entire length being

Fourth month.

formed by the head. Fine downy hair has appeared on the scalp and over some other parts of the body. The mouth and the nose have assumed their normal shape and the sex is now easily distinguishable. The movements of the limbs have just commenced to take place.



Sectional plan of the pregnant uterus in the third and fourth month.

a. Plug of mucus in the neck of uterus.
b. Fallopian tube
c. Decidua vera.
g. Allantois
h. Umbilical vesicle.
i. Amnion.
k. Chorion.
d. Cavity of decidua.
f. Decidua serotina.
The uterine cavity is occupied by the ovum.

Fifth month. The fœtus is now ten inches in length and weighs about a pound. A covering of fine hair (lanugo) covers the whole body and the vernix caseosa has made its appearance. This latter is a greasy white material which is found on the skin of the new-born fœtus. The movements of the fœtus are now distinctly perceptible by the mother.

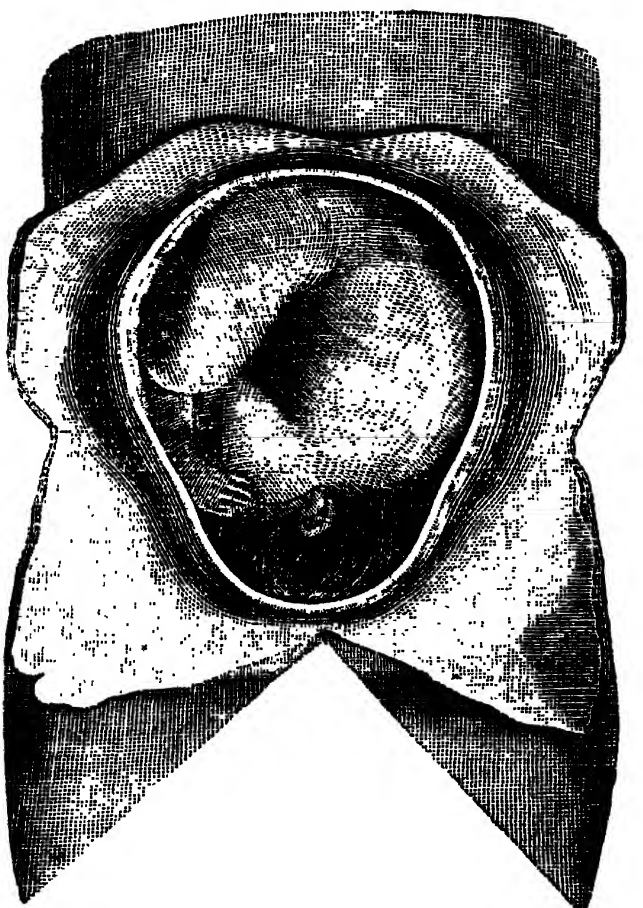
Sixth month. At the end of the sixth month the fœtus is about twelve inches in length and weighs about two pounds. Eye-brows and eye-lashes appear and the hair on the scalp has grown in length.

Seventh month. The length is now about fourteen inches and the weight about three pounds. The fœtus is generally regarded as viable at the end of the seventh month if managed properly.

Eighth month. The length is now about seventeen inches and the average weight is from four to four and a half pounds.

Ninth month. The length has not increased much and is now about eighteen inches. The weight is from four and a half to five and a half pounds.

Tenth month. By the end of the tenth month the intra-uterine development is complete and the fœtus is called a full term fœtus. The average weight is about seven pounds while the average length is twenty inches. The accompanying diagram shows the position of a full term fœtus within the uterus. The fœtus lies inside a bag of membrane containing a watery fluid.



Normal attitude of the fœtus in 'head presentation.'

Normally when the fœtal development is complete *i. e.*, by the end of the tenth lunar month labour pains set in and delivery of the child takes place.

PREGNANCY

Pregnancy is the term applied to the condition of a woman when she, contains within her the products of conception. Pregnancy begins with the fertilization of the ovum and terminates with its expulsion. The duration of pregnancy varies within certain limits in different women. It is generally considered to be ten lunar months of four weeks each or 280 days counting from, the first day of the last menstruation.

Changes during pregnancy.

From the begining of pregnancy many important changes begin to appear in the maternal system affecting more particularly the generative organs and also to a less extent almost every other organ in the body. As a rule the first intimation that pregnancy has taken place consists in the failure in the recurrence of the menses at the expected period. The suppression of the menses is a sign of some diagnostic value in a woman who has been strong, healthy and regular. In weak and sickly women the cessation of the menses may be owing to other causes such as anæmia, tuberculosis etc. On the other hand the presence of pregnancy may be overlooked owing to its supervention on a previous period of amenorrhœa, as during lactation.

Morning sickness.

Nausea and slight vomiting occur about the third or fourth week generally and continues to the end of the third month. Its occurrence and duration however are very irregular. If it is met with in the case of an otherwise healthy woman and if no cause other than pregnancy can be found for it, it constitutes a symptom of a slight corroborative value.

Salivation. It is observed only in a certain number of cases. The saliva is very sticky and is white and frothy. It can only be delivered from the mouth with difficulty.

Nervous symptoms. In a very large number of cases a functional disturbance of the nervous equilibrium is observed during pregnancy. The whole organism is in a state of strain and slight causes suffice to move it either in the direction of abnormal depression and melancholia, or in the direction of excessive exhilaration. In predisposed persons hysterical attacks are likely to develop during the period of pregnancy and there may be various neuralgic affections and temporary alterations in the temperament and appetite. The term 'longings' or *pica* has been applied to the various fancies or even cravings by which a pregnant woman may sometimes become possessed and which are perhaps at complete variance with her ordinary inclinations.

Breast changes. A slight degree of fullness may be appreciated by the patient herself within a few weeks after conception. By the end of the second month the increase in size becomes apparent to an outside observer. From that time on, the breasts become progressively larger, firmer and more knotty. Accompanying the enlargement of the breast itself is an enlargment of the superficial veins, causing the appearance of a delicate marbling of the skin in fair skinned women. The increase in the size of the breast sometimes produces such marked tension in the skin as to cause the appearance of white radiating lines due to pressure atrophy. From the third month onwards a little fluid can always be squeezed out of the breast by pressure

in the direction of the nipple. Such fluid is at first usually clear but becomes opaque during the latter months of pregnancy. The most important of the breast changes from the diagnostic point of view appear in the neighbourhood of the nipple. The nipple becomes tense and prominent and the surrounding area which is called the areola becomes gradually darker in colour. Over the area little prominence called Montgomery's follicles appear and the areoala itself enlarges. Surrounding the areola for an area of one inch or more there appears about the fifth month a ring, over which are seen numerous round spots or whitish mottled patches 'presenting an appearance as if the colour had been discharged by a shower of drops falling upon the part.' This area has been called the secondary areola and is of great importance as a diagnostic sign.

Enlargement of abdomen.

The first noticeable change in the abdominal wall as a result of pregnancy is slight flattening just above the symphysis pubis brought about by the sinking of the uterus and its contents. From he middle of the fourth month onwards, the abdomen enlarges symmetrically and progressively up to the end of the ninth month. Then during the tenth month the fundus falls to the level it occupied at the end of the eighth month. Running downwards from the umbilicus a well marked brown line is observed and there is also an increased pigmentation in the neighbourhood of the groin. As the abdomen becomes more protuberent the umbilical scar becomes gradually raised up and reaches the level of the surrounding skin at the sixth or seventh month. Later it becomes completely everted and projects above the general surface. The stretching of the

Diagram showing the growth and size of the womb during pregnancy, the numbers 3, 4, 5, etc., indicating the outline at the end of the third month, fourth month etc. Between 8½ and 9 months, the womb settles downwards somewhat.

abdominal wall results in the production of pinkish or bluish marks—striæ gravidarum—on the lateral aspect of the lower portion of the abdomen, After delivery they assume a white colour and are slightly depressed below the level of surrounding skin.

After the fourth month a tumour can be felt rising out of the pelvis and extending into the abdomen. After the fourth month the fœtus can be usually felt and during the last four months of pregnancy the fœtal parts can in addition be recognised from the outside by feeling with the hand. About the eighteenth week the patient generally detects the movement of the fœtus for the first time. The sensation is described as *quickening*. During the later months the active movements of the fœtus can be readily felt by laying the hand on the abdomen over a limb and keeping it there for a moment. If the fœtus is pushed slightly with the other hand, it will usually respond with a movement.

The fœtal parts and movements

By applying the ear directly over the abdomen or by means of a stethoscope an attentive listener can hear the beatings of the fœtal part from the end of the fourth month onwards. If the fœtal heart can be detected it constitutes one of the surest signs of pregnancy.

The fœtal heart.

During prenancy micturition is more frequent than normal and is especially marked while the uterus is contained within the pelvis. At the fourth month alleviation of this unpleasant symptom might occur coincident with the ascent of the uterus. Constipation is generally observed during the gestation period and probably more as the result of want of tone in the wall of the gut than of direct pressure upon the intestine.

Bladder and rectum.

Management of Pregnancy

Many persons are in the habit of looking upon pregnancy as a 'nine months' disease.' The notion that a woman only escapes being ill twelve times a year by having an illness which lasts for nine months is responsible for many feminine derangements. It is much to be regretted when a pregnant woman considers or is led by her friends to consider that she is a 'patient' as such a consideration causes her to dwell too much upon her condition and perhaps to alter her normal mode of living. In a normal pregnancy see that the ordinary physiological functions of the body are properly discharged and due attention is paid to the rules of hygiene. Occupapations which involve habits and surroundings which are objectionable to hygienic and physiological requirments affect unfavourably not only the health of the mother but also that of her offspring. The advice that all the laws of health which apply to the non-pregnant condition, should be specially enforced in the pregnant state must not be interpreted as permission to the pregnant woman to continue disregarding many of the laws of health just as she did when nonpregnant.

During pregnancy the food should be simple, ample and nourishing and all indigestible articles should be avoided, but at the same time there should be no undue restrictions or excess. Plenty of fluid may be drunk as it helps the action of the kidneys but the excessive use of tea, coffee and other stimulating beverages should be forbidden.

Special attention should be paid towards the proper functioning of the skin the kidneys and the bowels. The

pregnant woman should in all cases be warned of the importance of this. If there is constipation it should be relieved by laxatives or mild purgatives. If the kidneys do not act sufficiently the amount of fluid should be increased – particularly such fluids as barley water and plain water. The proper use of baths for the purpose of personal cleanliness is also of importance and the normal habits should not be changed. The genitals should be bathed night and morning with clean warm water. If there be any leucorrhoeal discharge it is advisable to administer a douche daily with some non-irritating dilute antiseptic solution at low pressure

The dress during pregnancy should be such that no pressure is exerted upon the abdomen. If the abdomen is pendulous the use of a well-fitting abdominal belt, so adjusted as to support the abdomen from below, is advisable.

Violent exercises of all kinds should be prohibitted during the period of pregnancy but the woman should be encouraged to do her usual household duties if they be not of too arduous a nature. Gentle and regular exercise in the open air is a most essential part of the hygiene of pregnancy, but long standing or undue prolongation of exercise should be avoided.

The question of permissibility of coition during pregnancy is an important one. In all cases in which there is history of previous abortion it should be strictly forbidden. In normal individuals sexual intercourse during pregnancy may be allowed if it be conducted without any undue violence.

A pregnant woman should as far as possible be sheltered from influences which tend to give rise to excitement, annoyance or depression. The effect of maternal impressions on the fœtus is not yet clearly understood, but there can be no

doubt that if mental conditions are sufficient to interfere with the appetite, sleep and general health of the woman, they must also prejudicially affect the fœtus.

The breasts should be carefully attended to during pregnancy. At no time should the corset or other garments be allowed to press upon them as this interferes with their development and prevents the formation for a proper nipple. During the last month of pregnancy the patient's attention should be directed to two points—the hardening of the skin of the nipple and the formation of a proper nipple. If this is not done, when she commences to suckle the infant she will find that the dragging of the latter will cause small lacerations and excoriations of the skin, conditions which are sometimes extremely painful, and that if the nipple is not properly formed the infant cannot take it in its mouth. In order to harden the skin, the nipples should be bathed with an alcoholic lotion a couple of times a day, such as whisky or equal parts of eau-de-cologne and water. In order to form proper nipples, the woman should be taught to draw them out gently with her fingers several times a day. In so doing, no force must be used and care must be taken tnat the fingers are clean. Rough manipulation may result in the occurrence of small lacerations, and if these becomes infected, mastitis may follow.

LABOUR

'Labour is the term applied to the process which severs the connection between the ovum and the mother by removing the former from the organism of the latter.' The immediate cause of labour is the occurrence of uterine contractions as it is to these that the expulsion of the ovum is due, and under normal circumstances these contractions occur at the end of the tenth month.

Three stages of labour.

Labour is divided into three stages, first stage comprises the period during which the mouth of the uterus (cervical canal) is dilating in order to allow the passage of the fœtus. It is hence also known as the stage of dilatation. The second stage comprises the period during which the fœtus is being expelled from the genital passages. It is hence also known as the stage of expulsion. The third stage comprises the period during which the remainder of the ovum i.e., the placenta and the membranes is being expelled. It is hence known as the placental stage.

First stage.

The first stage commences with the onset of the first painful contraction of the uterus, and ends with the full dilatation of the uterine orifice—an occurrence with which the rupture of the enveloping membranes of the ovum is usually synchronous. Its average length is in primiparae from twelve to twenty-four hours, in multiparae from six to eight hours.

Second stage.

The second stage commences immediately the first stage is completed and ends with the birth of the fœtus. Its average length in primiparæ from one to two hours, in multiparæ from ten to fifteen minutes.

Third stage.

It is difficult to state what would be the average length of the third stage if the process of expulsion of placenta and the membranes was left wholly to the natural efforts as this for several reasons is seldom done. It is usually stated that under such circumstances the placenta would be expelled in from one to three hours, but this is probably too short an estimate. If however the usual method is adopted of waiting until the placenta has been detached and expelled from the uterus by the natural efforts and then expressing it from the vagina by pressure applied over the suprapubic region the average duration of the stage is from twelve to fifteen minutes.

The Management of Normal Labour.

The room in which the patient is to be confined, and in which she must subsequently pass the puerperium should be whenever possible, of good size, well-ventilated, well-lit, and free from draughts and from unnecessary furnitures. The patient's bed must be so placed that plenty of light may fall on it, especially on the right-hand side. The bedstead should be a single one and preferable with a hard top. Spring bed steads are not desirable. The bed itself should be made in the following manner from below :—(1) The mattress ; (2) A large mackintosh completely covering the mattress and turned in beneath it ; (3) An under blanket ; (4) The undersheet and bolaster ; (5) A small mackintosh enclosed in a drawsheet, of sufficient size to reach from the middle of the patient's back to the knees ; (6) A pillow ; (7) A topsheet and the necessary number of blankets. The draw sheet and contained mackintosh should hang over the side of the bed in such a manner as to form a valance. The other essentials in the room are a large jug which will hold about a gallon and a half ; a stand on which it can be placed and which will raise it about two feet above the bed of the patient ; four basins—one in which to wash the hands—one for the antiseptic, one in which to keep cotton wool wipes for the patient, and one in which to place any instruments that may be required ; plenty of hot and cold water, a small bath in which the infant can be washed, a large bath or tin to place beneath the bed, if douching is required ; lastly a fire in which a kettle can be boiled should be within reach. The

jugs for the douche, and all the basins, must be carefully scrubbed with soap and water before use. The garments for the infant and the patient's binder etc. may be conveniently hung near the fire so that they may be warm when required The sanitary towel or wool pad which it is intended to apply over the vulva after delivery and the ligatures with which it is intended to tie the cord should be placed at the commencement of labour in a basin in 1 in 500 corrossive sublimate or other disinfectant. By so doing they are sterilised ready for use when required.

The patient should be clad in warm, light and loose garments which can readily be removed if neccessary. A clean dress must be ready for use after delivery.

It is desirable in all cases to administer a purgative as the first symptoms of labour appear. For this purpose castor-oil, liquorice powder or cascara sagrada may be used and should be followed by an enema as soon as labour has well set in. In this way the rectum is emptied, and all soiling of the parts by the forcing out of fæces during the second stage is avoided. The patient should pass water at frequent intervals during labour. The external genitals may be frequently washed with warm water to which some mild antiseptic has been added. Vaginal douches should not be administered in cases of normal labour.

Management of the first stage.

The main phenomena of the first stage are the dilatation of the cervix and the fixing of the fœtal head in the pelvic brim. Dilatation of the cervix can be facilitated by inducing the patient to walk about, or to sit rather than to lie down, and by preserving the membranes from premature rupture. The uterine

contractions of the first stage act more advantageously when the patient is in an erect posture as the action of gravity increases the downward pressure of the ovum. In this matter, patients, as a rule, require little urging, as they are more comfortable whilst walking about than when in bed. Premature rupture of the membranes cannot always be prevented. It can however in some cases be warded off if necessary by preventing 'bearing down' efforts on the part of the patient and by keeping her in bed.

Management of the second stage

The principal phenomenon of the second stage is the expulsion of the fœtus. During the first part of this process that is until the fœtal head appears at the vulva no active assistance is needed. The patient is kept in bed at this stage. In this position she can best assist the uterine contractions by voluntary bearing down efforts. These efforts are now encouraged, and to enable her to make them with greater effect a towel is tied to the foot or head of the bedstead in such a manner that she can take it in her hands and pull upon it during a bearing down effort.

As soon as the fœtal head appears at the vulva, the assistance rendered by the obstetrician must become more active, and he must prepare to assist the birth of the fœtus and to prevent the laceration of the perineum. The patient lies on her left side, her buttocks projecting beyond the edge of the bed, her legs drawn up and separated by a pillow. The obstetrician standing by the side of the legs at the level of the buttocks passes the left hand over the abdomen of the patient and brings it between the thighs from before backwards, in such a manner that the advancing head can be grasped by the

fingers when required. When a contraction occurs the patient is told to cry out and not to strain. If by this means the force of the contraction is so weakened that the head is not expelled, so much the better. If however the contraction is strong enough to drive the head downwards, all we can do is to try to bring the latter down in the most favourable position, as it is inadvisable to endeavour to hold it back. With the fingers of the left hand applied to the scalp endeavor to press the head forwards, and at the same time to keep it in a position of flexion, until the occipital prominence (projection at the back of the head) or a point below it, lies beneath the symphysis. Further pressure with the fingers of the right hand will then result in producing extension, during which the head will be born.

If we are able so to lessen the strength of the contraction that it does not expel the head, as soon as it is over we apply pressure behind the anus as has been described. For such to be effective the head must be sufficiently low down, otherwise our pressure will merely drive it back into the uterus.

If we find on applying pressure, that the head is not sufficiently low, we must wait until another contraction has occurred, and then try again. If the head is sufficiently low but the resistance to its birth is too great to allow it to be expressed in this manner, the patient must be made to bear down slightly, and as a rule the head can be delivered.

As soon as the head has been delivered the next duty of the obstetrician is to ascertain that the cord is not twisted round the neck. To do this he slips one or two fingers into the vagina until the neck is reached, and feels carefully in all directions. If the cord is round the neck it must be set free in

some manner as otherwise it may be so short as to prevent the birth of the fœtus. The usual method of doing this consists in drawing down a loop of the cord and slipping it over the head. If the cord is not round the neck, or if being so at first, it is set free and is found to be pulsating, it is not necessary to unduly hurry the expulsion of the trunk. Usually in half a minute or so after the birth of the head, a uterine contraction occurs and drives the shoulders down. As they descend, lift the head forwards between the thighs in order to bring the posterior shoulder over the perineum. Then draw the head slightly backwards in order to bring the anterior shoulder from behind the symphysis. In this way both shoulders are delivered, and by again drawing the head and shoulders forward the rest of the body follows. The

Method of cutting the umbilical cord. The cord is first tied tightly and then cut with clean scissors.

new born baby announces its arrival with a lusty cry. It is placed on its right side, with its face turned away from the mother, care being taken that the cord is not stretched tight. As soon as the cord stops pulsating it is tied secure about two inches away from the baby's abdomen and cut a little above the ligature. The other end of the cord need not be tied. The baby is now wrapped in a warm blanket and placed in its crib.

Management of the third stage.

As soon as the infant is born the patient is turned from the lateral position on to her back and the medical attendant places his hand upon the fundus of the uterus. He maintains the hand in this position during the entire stage, in order to note the occurrence of contraction and relaxation of the uterus, to promote contraction by gentle friction of the fundus and to prevent the accumulation of clots in the cavity in cases in which the contractions are feeble or absent. He further notes by this means the rising of the uterus into the abdomen, an occurrence which shows that the placenta has been expelled. The best method of applying the hand consists in sinking its ulnar edge transversely into the abdomen just below the umbilicus, until it meets the resistance offered by the spinal column. The entire uterus is then below the palm of the hand. When the placenta has been detached from the uterus—a fact which can be determined by the rising of the fundus—its delivery can be hastened by pressure on the uterus in a downward and backward direction. By this means the uterus is pushed downwards into the vagina and the placenta is driven out before it. After its delivery the placenta with the adherent membranes must be placed upon a flat dish in order that we

may thoroughly examine them with a view to determine whether any portion is left inside the uterus.

Two views of the placenta To the left the under surface, or maternal surface and to the right the upper or fœtal with the umbilical cord and the membrane partly removed to show distribution of blood vessels.

As soon as the delivery of the placenta and membranes is complete, the final step consists in washing away all blood

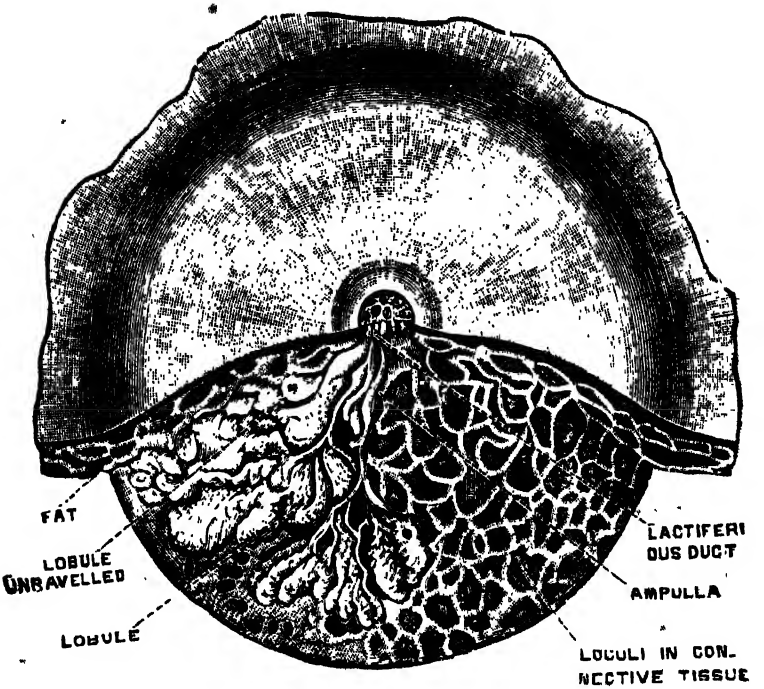
stains from the genitals and thighs, in removing the soiled linen, and in applying the napkins and binder. For washing the patient at this stage a weak solution of lysol is, perhaps, best (half a dram to the pint). The draw sheet and small mackintosh are removed and a dry and warm draw-sheet substituted. The napkin which had been previously placed in a solution of corrosive sublimate, as has been mentioned is wrung as dry as possible and applied to the vulva unless the patient complains of feeling chilled, the napkin may be applied wrung out of cold solution, as it is usually more soothing when thus used. It should reach upwards under the patient's hips behind and over the abdomen in front. The binder is next applied. It should reach from the level of the ensiform cartilage (lower end of the breast bone) to the middle of the thighs and should be fastened with four or five surgical pins. Particular care must be taken to see that the pressure of the binder is so directed that the uterus is pressed downwards into the pelvis. The patient is now comfortably settled and labour may be considered to be over.

THE PUERPERIUM

The puerperium or the puerperal state is the term applied to the period during which the woman is recovering from the effects of pregnancy and parturition. Strictly speaking it lasts from the completion of the third stage until the completion of uterine involution *i.e.*, for about six weeks, but clinically it is considered to end as soon as the lochial discharge has ceased—that is to say about the tenth or twelfth day.

As soon as labour is complete the patient experiences a sense of relief which is in marked contrast to her former pain-harassed condition. During the days of the lying in, the patient is in a state of general comfort and well-being to which for the last month of pregnancy, she had been a stranger. The first desire is perhaps, for a drink as the loss of blood during the third stage increases the thirst which suffering causes. As a rule the patient experiences a desire to micturate during the first twelve hours after delivery, or, at any rarte she will be able to empty the bladder when the necessity for so doing is pointed out to her. The bowels seldom act of their own accord so long as the woman is in bed, in part due to the effect of the recumbent position, and in part the result of the relaxed condition of the abdominal muscles and the lowered intra-abdominal pressure.

Occasional pains due to contractions of the uterus are of not infrequent occurrence and are known as after-pains. After-pains are usually absent in primiparæ and of common occurrence in multiparæ. The enlargement of the breast and



Dissected Lower Half of the Female Breast during the Period of Lactation.

the establishment of lactation are usually associated with slight stinging pains in the breasts and with more severe pain if overdistention occurs. When the patient is allowed up for the first time she almost invariably suffers from a degree of muscular weakness the existence of which she did not suspect when in bed. This, however soon passes off, and in a comparatively short time afterwards she regains her habitual strength and energy.

Food during puerperium.

The food of a puerperal woman must be simple, sufficient and appetising. For the first two days, light nutritous and liquid food is all that is required. On the third day if the bowels have acted, food of a more solid nature may be given in small quantities and supplemented as required by liquids. From this onward the dietary becomes more liberal, but so long as the patient remains in bed her meals should be given at short intervals and small amounts of food only be taken at a time. There should be considerable variety in the food. The use of alcoholic beverages as stimulants is only necessary when the patient is in a weak condition from previous ill health or hæmorrhage.

Bladder.

Attention to the bladder is one of the most important items during the first twentyfour hours after delivery. In no case should a parturient woman be allowed to pass more than sixteen hours without emptying the bladder.

Bowels.

Aperient medicines may be given on the evening of the second or the morning of the third day after delivery. If a motion does not result, a soap and water enema may be administered.

Douching.

At the commencement of the puerperium the uterus and vagina in a normal patient in whom no examination have been made after the birth of the child, have been proved to be aseptic, hence in all cases in which bacteria are subsequently found in the genital canal they must have gained admission from the outside. To prevent infection a pad of absorbent cotton wool impregnated with some antiseptic of sufficient strength to prevent decomposi-

tion of the lochia should be applied to the vulva and should be changed frequently. Normal cases of delivery do not require any douching during the puerperal period.

The patient should remain in bed till all lacerations have healed and the uterus has descended again into the pelvic cavity and until the lochia have become colourless and have almost or completely ceased. As a general rule these conditions are fulfilled about the tenth or twelfth day, and, save in exceptional cases it is not necessary that the patient should remain longer than this in bed.

Rest in bed.

After the completion of delivery as soon as the patient is rested the infant may be put to the breast, with the object of stimulating lactation, of promoting contraction of the uterus and of allowing the infant to get the benefit of the colostrum. From this on until lactation is established the infant may be put to the breast every four hours. As soon as lactation is established a regular interval of two hours is allowed between each feeding with the exception of one interval of four to five hours at night. In all cases, the nipples must be washed with a little warm water before and after each nursing. The first washing is performed in order to remove any milk which may have dried on the nipple and which being sour would produce a bad effect upon the child. The second washing is permormed in order to remove all milk from the nipple and so to prevent as far as possible milk decomposing there and leading to the infection of the milk glands and ducts. If the breasts become knotted, tense and tender, considerable relief will be obtained by the application of a piece of lint covered with a preparation consisting of one part of yellow

wax and eight parts of olive oil. If the amount of milk is insufficient it may be indirectly increased by 'over-feeding' the mother, care being taken that the digestion is not interfered with.

Sleep.

Plenty of sleep is of the first importance during the puerperium in order that the patient may recover from the mental and physical exhaustion from which she suffers. Nature thoroughly recognises the fact and it is but rarely indeed that a puerperal woman does not sleep sufficiently, unless there is some condition present which prevents her from doing so.

After pains.

The common cause of severe after-pains is the presence of a clot of blood in the uterus and consequently, the most satisfactory method of getting rid of the pains consists in expelling the clot. To do this gentle massage and compression of the uterus is usually sufficient but in some cases a uterine douche may be required. If the patient is not nursing and the afterpains are very severe, opium, hyoscyamus etc., may be administered under the direction of a physician.

ABSTINENCE AND EXCESS

In discussing the sexual life of adults we have stated that excessive continence may be harmful in certain individuals.

Abstinence.

About ten years ago the International Congress for the Prevention of Venereal Diseases in Brussels and after that the German Society for the Prevention of Venereal Diseases, then the American Society of Sanitary and Moral Prophylaxis, later the Georgia and other State Medical Societies passed resolutions declaring absolute sexual continence to be not injurious. Some recent anthorities on sexual matters however do not agree with the above opinion. Most physicians have very little or no experience in the matter and it hardly makes any difference on which side of the question they vote.

Prolonged continence produces in some cases a weakening of the sexual power and gives rise to a train of nervous symptoms characterised by irritability, nervousness, palpitation and sometimes psychical disturbances such as phobias, obsessions etc. The weakening of the sexual powers may be preceeded by a stage of great irritability of the sexual organs, during which too frequent pollutions may set in and become permanent. The sexual instinct disappears gradually if not roused from without.

Soldiers and other robust people when compelled to observe continence for prolonged periods of time often find themselves impotent on trying to resume their sexual life until the novel excitations had again animated the sexual organs to new activity. The effects of abstinence vary in

different individuals some persons suffering more than others. Those with strong sexual desires suffer most.

Sexual excess.

Although most authorities are unanimous in pronouncing sexual excess to be harmful yet there is a great diversity of opinion as to what constitutes excess. It should be borne in mind that sexual excess is not the same thing as sexual abuse. Lallemand says "I call abuse every abnormal use of anything. Concerning the generative organs, I understand abuse to be every irregular, premature or other action which cannot result in the propagation of the race. There are no doubt many connecting links between these abuses and sexual excesses."

Vecki defines excess as follows:—Excess is coition for which an effort is required. Coition easily performed and for which the individual does not require long preparation can never be called excess, even if no "real want is to be satisfied." The virility of different individuals differs very greatly and what may be an excess for one individual may be quite within the normal limits for another. An individual may after coition, be disabled for a fortnight, while another after coition repeated several times at short intervals, can scarcely await the next happy hour of love. There cannot be any question of excess so long as no unusual effort is required, no special means is made use of for rousing sexual passion, and no feeling of fatigue or faintness is experienced, regardless of the number of copulations, even if repeated at short intervals.

Since the sexual power differs in different individuals and in the same iindividual at different times the limit between moderate use and excess is never a fixed thing. That which

was moderate indulgence ten years ago may be excessive today, and even what might have been accomplished easily and without fatigue a few days or a few weeks ago may be hurtful now. So also what may have seemed quite normal with one woman may have to be considered as a decided excess if committed with another woman. It must be understood that sexual excess in women produce as much harmful results as in men. If a woman, however, feels a disinclination for a man, she can, without participating in the act simply endure it. In such cases of course the evil effects of excess may not be observed.

The consequences of immoderate coition are characterised by a loss of the sexual power and impotence with its attendant evils. After an excess in venery there is a temporary disappearance of all sexual desires. With weaker natures such a time follows sometimes after a single night of revelling. During this period coition would be an impossibility. This condition however cannot be called impotence and must be considered as a normal phenomenon as during this period the overstrained sexual nerves and centers are recovering from the effects of fatigue. With sexually weak men this state lasts longer than with stronger ones. It will last longer after repeated excesses and these pauses growing ever longer pass sooner or later into a permanent inability, which we justly call impotence.

In some persons who persist in continuing excess for years another type of impotence might arise. A state of satiety for ordinary sexual pleasures supervene and a perverse sexual sensation develops itself quite gradually. The patient is incapable of performing the sexual act in a natural

manner but can still indulge in cunilingus, fellatio, pedrasty or other wayward acts to satisfy his perverse lust. This type of impotence is generally seen among elderly persons.

Contrary to the popular idea excess very seldom gives rise to frequent pollutions or spermatorrhœa. Vecky says "Considering that I have observed a great number of patients suffering from spermatorrhœa, I may be justified in the assertion that immoderate coition without onanism cannot cause spermatorrhœa." Abnormal pollutions and spermatorrhœa may sometimes arise in the train of impotence but never directly after excess in venery.

MASTURBATION

Masturbation has been practised by man from the very earliest time. In fact it is as old as the human race. In the records of ancient human history throughout the world statements and hints about masturbation are to be found. The ancient Hindoos, Chinese, Egyptians, Hebrews, Greeks and Romans were all acquainted with it. Apes, bulls, stallions, asses, dogs and other animals have been seen to practise masturbation when proper mates are not obtainable. Masturbation has sometimes been observed in young children and even among infants.

During the time of puberty the ever increasing sexual tension demands gratification and violent erections occur causing the individual to manipulate the genitals with his hands and thus he learns masturbation involuntarily in some measure. Certain movements such as swinging, rocking etc., performed for some other purpose, may induce masturbation. Bad example and seduction however are the most frequent causes of the spreading of masturbation habit and these are the factors which bring under the sway of this habit quite immature children who up to that time did not feel the least movement of sexual desires. A single so-called black sheep often suffices to corrupt all the others in a family, institute, school etc., whereby the frequency of masturbation in boy's and girl's institutes finds an easy explanation. It is very easy to seduce immature children. Corrupt individuals and even some teachers find a pleasure in misleading immature children to masturbation. There are servants and nursery maids who

understand how to quiet screaming children by playing with and sucking the child's genitals. Such manipulations promptly quieten the child but thereby a state of irritation in the sexual organs is caused, and the child is induced to pull and play with them, and finally to practise real masturbation.

Masturbation habit is favoured by a sedentary mode of life and the want of outdoor exercise. Evil company, erotic literature and pictures by exciting the sexual instinct to its highest degree are often instrumental in causing excesses in masturbation. Stimulating foods and drinks may also act as inciting factors. Uncleanliness may cause an accumulation of sebaceous material and bring about a state of irritation of the sexual organs. The hands will thus be induced to manipulate the member, this possibly ending in masturbation. As other causes of masturbation may be mentioned, stone in the bladder and other sources of bladder irritation, certain cutaneous diseases and especially phimosis with and without balanitis. Thread worms have also been sometimes found responsible for this habit. Cycling, the working of sewing machines and other similar persuits may induce masturbation in persons whose sexual organs are already in a state of irritation. Constipation may have a similar effect, so also the wearing of too tight garments. Few persons are aware that flogging on the bare back is apt to incite to premature activity the sexual organs or rather the nerves which lead from the centre of erection through the spinal cord. This fact alone ought to induce us to abrogate as much as possible the brutal and absolutely unnecessary whipping of children.

The effects of masturbation on health is a question of vital practical importance. The harmful effects of masturbation

have been very much exaggerated. All sorts of diseases have been supposed to be caused by it. Paralysis, tabes dorsalis, insanity and a host of other diseases have all been ascribed to it. Careful observations however have shown that much of the alleged ill effects of masturbation result from the mental struggle that accompanies the act rather than as a direct consequence of the act itself and also from excess in masturbation. The average masturbator has an idea that he is practising a sinful and an immoral act but finds himself powerless to fight against the overpowering demand for sexual satisfaction or against the habit of masturbation. Thus arises an internal struggle which makes the unfortunate patient apprehensive of his health. An accidental headache, an occasional dyspeptic symptom, a perfectly natural failure of memory, a noctural emmission are all ascribed to this secret vice. The literature issued by the quack medicine vendors and the irresponsible talk of ignorant friends serve to foster and develop these ideas. Such false apprehension continuously acting on the mind brings about a state of mental and physical debility which it takes a long time to cure.

It is generally believed that masturbation is far more injurious than coition. It has been urged that circumstances preceeding and accompanying ejaculation, and most of all, certain processes in the nervous system, must be of more consequence in masturbation than in copulation, and that these "circumstances and processes" require a greater effort to be brought about by masturbation than by coition and consequently produce greater fatigue. Hummel thinks that the climax of excitation in masturbation is higher than in normal intercourse,

and for this reason "more of an insult to the cerebro-spinal centres." Recent observations by Moll, Havellock Ellis and others have shown that mastusbation by itself unless it be carried to an excessive degree seldom produces any appreciable harm. Moll's observations on the effects of masturbation in young chilren have shown that even when the sexual organs are immature masturbation which would be considered excessive by most persons does not produce much injury. Some modern sexual authorities have gone even so far as to advocate the moderate use of masturbation, by adults in clearing the system of excessive sexual tension when no lawful chance for sexual intercourse is available and when ordinary measures are ineffectual in checking the sexual desire.

It must be remembered however that masturbation once indulged in is likely to grow into a habit and lead to excess. The probability in many cases of growth of a habit of masturbation leading to excess, is the great danger of masturbation and makes it disirable that a habit of never indulging in masturbation should be ordinarily formed and developed. What constitutes excess in masturbation is a question which is extremely difficult to answer. How much of the ill effects may be due to the mental conflict and how much to the act itself can seldem be definitely ascertained. There are persons who commit excesses in venery with impunty but who after a single act of masturbation becomes weak and dejected. In such cases the evil effects are directly ascribable to the mental condition of the patient. In a majority of persons masturbation becomes naturally distasteful when opportunities for normal gratification are obtained. Such persons suffer most fro masturbation if they happen to indulge in it.

Masturbation if carried to excess produces the same kind of mischief as excess in venery. According to some authorities excessive masturbation produces an increased sensibility of the sexual organs with the result that nocturnal emmission becomes extremely frequent. Very soon a hyperesthetic form of sexual neurasthenia develops which, by itself, can cause impotence. Spermatorrhœa may also result from excessive masturbation and there may be a perversion of the sexual instinct.

Dr J. C. JACKSON says :—"Of the signs whereby masturbation is almost infallibly indicated, impairment of nutrition, accompanied by capriciousness of appetite, stands prominent. Proverbially true is it that all masturbating boys and girls, whether of younger or older ages are voracious eater, though exceedingly capricious in their appetites, and are not satisfied with any food unless it is so highly seasoned or highly flavoured as to answer for the present their apparent demands. I have never seen a person who was a habitual indulger in this vicious practice who could be satisfied on any occasion with the presentation to him or her of nutrient food, simply yet healthfully and relishably cooked. One of the signs therefore, whereby I am led to decide whether or not persons are in the habit of masturbating, is the particular disgust or dislike which they show for food, which they are otherwise accustomed to eat, if it is simply cooked. I could give a list of articles which masturbators have a great liking for and for which but very few other persons care, unless they are in the same relative condition of health, caused by sexual excesses. I never knew a girl to eat lime off the wall or to chew up her slate pencils, who was not to greater or less extent a

victim of this practice. I never knew a boy who was accustomed to eat lumps of salt without anything with it, and in fact I might say who was a very inordinate eater of salt upon his food, who was not or had not been at some period of his life a masturbator. I do not believe that there is a boy fourteen years old to be found in the United States, who uses tobacco habitually in any form, who is not a masturbator; and I am sure that the same may be said with truth of both boys and girls who are in the daily habitual use of stimulating drinks, whether they be of liquors that are distilled or those that are fermented; also those who have a passion, as we term it, for eating spices and condiments; boys and girls who have a hankering after cloves, cinnamon, caraway, mace and the like are surely habitually associated with this practice.

"Of girls there is more liability to be deceived in endeavouring to find out the causes, for their apparent ill health than there is of boys; because neither parents nor members of the family, nor in fact physicians are at liberty under the laws regulating the social relations of the sexes, to exercise as frank, free and full inspection and examination into all the causes that produce disease among females as they are among males. Owing to this masturbation is practised with much more unsuspiciousness among girls than among boys, especially at or about the time of puberty. If, at that period the girl shows any infirmity, feebleness, lack of vigour or any thing of that sort, the mother has all her attention directed toward the development of the menstrual function. She is afraid the child who is "getting to be a woman is likely to fail in the upspringing of the new activity, and to have in consequence "a sick time;" she is apt therefore, to draw a

foregone conclusion about it, and to proceed to doctor for her daughter. In a large number of cases, what are supposed to be the derangements of the menstrual function, consequent upon a girl's arrival of puberty, as shown in her illness or perhaps severe sickness, should be attributed to a habit of rousing up, by artificial means, her sexual organism to unnatural excitement, the reactionary effects of which are seen in her morbid states of body, and about which her parents and friends are so often alarmed. Let it be borne in mind then by parents whenever any such particular, unnatural, or unaccountable conditions of appetite show themselves as I have alluded to—in fact, when any strange out of the way alimentive caprice, is exhibited by a boy or a girl, for which there is not the most obviously plain interpretation at hand the exposition of it is to be had only by and through the acknowledgement of the fact that the party is a masturbator.

"Another sign of masturbation upon which I have accustomed myself to place great reliance, and which I have seldom known to be incorrect, is the particular gait which masturbating girls and boys show when the habit has become ripe in them. One used to close and specific observation in this direction can detect a boy who is educated to this vice, by the peculiarity of the motion which is discernable at the junction of the locomotive organs with the body. Such a victim though he may be young, quite young, or though he may be in his teens, walks, when you see him posteriorly, as if he were stiffened. He does not show the peculiarity so much when walking slowly, or when running very fast; then he impresses the looker on that he is rheumatic, and suffering from stiffness in the small of his back. As far as you can

see such a boy, when he is in rapid walking motion, you can tell him.

"A masturbating girl who is past the age of puberty may be known by her gait, notwithstanding the difficulties in the way growing out of her style of dress, although it is by no means as easy to settle the matter as in the case of the other sex. Girls who have followed masturbating habits, from the age of ten years up to that of seventeen or eighteen, show, usually, stong indications of it in the failure of their glandular development. Such persons are apt to be flat breasted, or, as we term it, flat chested—the breasts not fllling as they would do under better and healthier states of the nutritive and secretory systems. They become round shouldered; their heads seem to be dropping forward all the time, and their shoulders are drawn forward, as if forced in that direction and kept there by mechanical appliances. They fall in and become hollow at the pit of the stomach, and they uniformly, as masturbating boys do, sit crookedly. They are particularly subject to a sideling gait, going one side at a time, as it were, as though there were a spirit of antagonism set up between their organs of locomotion, one leg being impelled to motion while the other is as strongly impelled to rest, and so alternations of activity and repose become manifested more in opposition than in co-operation. This gait or style of motion, therefore, may be characterized as a wiggle rather than a walk which peculiarity by such persons is sometimes made more positive than is neccesary in order to conceal so much of it as is invisible."

Lallemand observes :—"When a child after having proofs of memory and intelligence experiences daily more and more

difficulty in retaining and understanding what it is not only from unwillingness or from idleness as is commonly supposed. Besides the show and progressive development of his or her health, the diminished energy of application, the languid movement, the stooping gait, the desertion of social games, the solitary walk, late rising, livid and sunken eye, and many other symptoms, will fix the attention of every intelligent and competent gurdian of youth."

O. S. Fowler describes the characteristics of the masturbator as follows :—"The private sensualist may be further known by his pallid bloodless countenance, and hollow, sunken, and half ghastly eyes, the lids of which will frequently be tinged with red ; while, if his indulgence has been carried very far, he will have black and blue semicircles under his eyes, and also look as if worn out, almost dead from want of sleep, yet unable to get it, etc. He will also have a half wild, or half lascivious, half foolish smile, especially when he sees a female. He will also have a certain quickness yet indecision of manner ; will begin to do this thing, then stop and essay to do that, and then do what he first intended ; and in such utterly insignificant matters as putting his hat here and there etc. The same incoherence will characterize his expressions, and the same want of promptness mark all he does. Little things will agitate and fluster him, nor will he be prompt, or resolute, or bold, or forcible ; but timid, afraid of his own shadow, uncertain, waiting to see what is best and always in a hurry, yet hardly knows what he is doing or wants to do. Nor will he walk erect, or dignified, as if conscious of his manhood, and lofty in his aspirations, but will walk and move with a diminutive, cringing, sycophantic,

inferior, mean, self-debased manner, as if depreciated and degraded in his own eyes ; thus telling you perpetually by his shamed looks and sheepish manner that he has been doing something low, contemptible and vulgar. This secret practice has impared both his physical and mental manhood and thereby effaced the nobleness and efficiency of the masculine, and deteriorated his soul, beside having ruined his body.

He will moreover, be dull of comprehension, incorrect, forgetful, heedless, full of blunders of all sorts ; crude and inappropriate in his jokes, slow to take the hint, listless, inattentive, absentminded, sad, melancholy, easily frghtened, wanting in clearness and point of idea, less bright than formerly, and altogether depreciated in looks and talents compared with what he would have been, it had never contracted this soul and body ruining practice."

The above descriptions of the effects of masturbation represents the popular view and needless to say contains a good deal of exaggeration. The signs and symptoms which the masturbator is said to exhibit may result from a variety of different conditions—in no way connected with the sexual sphere.

As has already been mentioned masturbation does produce harmful results if carried to excess. The practice in such cases develops into an unbreakable habit against which the unfortunate victim struggles in vain. Such a patient should be treated with sympathy, care and forbearance. All undue apprehensions should be removed from his mind and he should be cautionsly explained of the dangers of the habit. Right dietetic habits should be enforced and nothing but the

very plainest and simplest food should be allowed. Meat, hot spices and all kinds of stimulating beverages should be avoided. An occasional fasting would much benefit the patient. The bed or pillows should not be very soft and the bed covering should be very light even in cold weather. The bed room should be thoroughly ventilated both night and day. "Early to bed and early to rise" should be an invariable rule. No second morning nap should be allowed, but as soon as the person first awakes he should leap immediately out of bed. When possible, sleeping on the back should be avoided. On arising the patient should take a cold bath followed by a brisk walkout in the morning air, returning in time for breakfast. The patient should pass as much time as possible out of doors and should indulge in outdoor games and exercises.

The mind of the patient must be directed in legitimate channels and he should remain away from evil company. "Nothing serves so well to strengthen and sustain the young person who has resolved to attempt self-reformation, as a lively interest in the various reforms of the day, and in becoming a labourer in the cause of temperance reform, health reform, moral reform, etc., he finds himself surrounded by an influence which seems to buoy him up, and give him energy and fortitude to accomplish his own particular renovation of habits. His reading and studies and reflections, should be carefully directed to practical and not to speculative subjects."

In young children, who have been led into the practice by their attendants, it is only necessary that they should be watched closely and with right food, bathing, pure air and exercise they will rapidly recover. They must be disuaded

from the masturbating habit with gentleness and sympathy and no undue harshness should ever be exhibited. In a frank, kind, loving way, the parents should instruct their boys and girls as to the nature, object and requirements of the sexual power for good or evil. They should warn them against the danger resulting from abusing it but care should be taken not to arouse any undue fear in the child's mind. Parents who allow children to grow up without in any way instructing or advising them about the use and abuse of the sexual department of their systems, do them a very great and lasting wrong.

In view of the risk of formation of habit of excessive masturbation, all people should try to shun masturbation and should develop a habit of never indulging in the same.

SEXUAL DISEASES

POLLUTION

Pollutions should not be considered a disease unless they be very frequent and bring about a disturbance of normal health. If a healthy robust individual of normal sexual vigour, does not in any way satisfy his sexual wants and if the glands preparing the sperm do not cease their action, an ever increasing quantity of semen collects in them, causing a very great tension, particularly in the seminal vesicles and this leads to pollution. Pollution is therefore a natural phenomenon in so far as it relieves the sexual tension and maintains mental equilibrium by bringing about a sense of gratification. Now the question arises—how frequent may these be before they should be called excessive. The sexual organs however do not act with equal energy with all persons and the frequency of pollution during a time of abstinence cannot be the same with individuals who are accustomed to daily intercourse and with others who indulge only once a week. Therefore in considering whether in any particular case pollutions are doing injury or not a careful examination of the case should be undertaken before a definite opinion can be pronounced,

Vecki says:—"A pollution may be called normal under the following conditions:—it must first of all occur during sleep, *i.e.*, during absence of consciousness and will power, it must be accompanied by a vigorous erection, erotic dreams, and by the natural sexual gratification; it must cause a sensation of well feeling and relief, but not of faintness, depression, headache or other similar troubles. If any one of these

conditions is missing, the pollution must be considered morbid." Curschmann has classified morbid pollutions as follows :—

I. Morbid pollutions occurring during sleep.

(*a*) The pollutions are more frequent than normal according to the peculiarities of the individual and the natural state of his semen. The accompanying phenomena are unchanged, but the patient feels afterwards faint, low-spirited, and is sometimes troubled with headache etc.

(*b*) The number of pollutions reaches such a height that they appear for this reason alone as pathological. The pollutions may occur everynight, or even more than once in one night. Moreover, they may occur sometimes directly after coitus and even in bed shared with a woman. The accompanying phenomena still resemble those of normal pollutions but the consequent pathological sensations are still more marked than in group (*a*).

(c) There is very great frequency, but an absence of the phenomena accompanying normal pollutions, such as erection, erotic dreams, and voluptuous sensations. The ejaculated semen is small in quantity, and in quality a thin liquid. In this group of morbid pollutions the psychical shock and the loss of substance are both insignificant, and yet the consequent phenomena are very grave.

II. Morbid pollution in the waking state.

(*a*) The pollutions taking place while the individual is awake, in consequence of trifling mechanical irritation such as friction by a tight garment, riding on horseback or in some conveyance.

(*b*) The so-called diurnal pollution happens even under the impress of psychical influence. Finally as the last form.

(*c*) The patient loses semen during micturition or defecation.

Curschmann and Vecki's idea of abnormal pollution covers such a wide field that it would be an extremely rare thing to find a pollution which would be considered as normal by these authors. For practical purposes it would be best to consider a pollution abnormal when a definite imparement of health can be traced to it. The absence of a vigorous erection or of erotic dreams or the want of sexual gratification and sense of well being following a pollution must not be considered as evidences of a diseased condition. They merely indicate that the pollution has partially failed in its purpose. Many persons look upon pollution as a debilitating disease and this mental attitude is responsible in a large number of cases for the faintness, depression, headache and certain other after-effects of pollution. Certain disturbances of the intestinal tract may be responsible for both the pollution and its so-called after effects. It is not at all uncommon for perfectly normal persons to get pollutions unaccompanied by any erotic dream and without experiencing any sexual gratification. As regards the frequency of the pollutions it should be remembered that the rate of secretion of sperm is not the same in all

individuals and that the sensitiveness of the sexual organs also differ in different subjects so that a stimulus which is ineffective in one case may bring about a pollution in another. Besides these it may happen that only one or two of the lobules of the vesiculi seminalis may contract during the orgasm of pollution the others remaining full. In such cases the amount of semen discharged will be comparitively small in amount and the tension being only partly relieved a recurrence of the pollution is likely to occur after a comparitively short interval. We know of cases where pollutions have occurred nightly and sometimes more than once in a night for years together without the individual suffering in health in the least. Such cases are not very common but they tend to show that the mere number of pollutions does not constitute by itself a sign of disease. Frequent pollutions however are a great source of annoyance and whenever possible, means should be taken to check them by proper dietary, exercise, open air life and other hygienic measures. Those who suffer from pollutions very frequently complain about the thinness and watery character of their semen. This symptom exists in reality only in a very limited number of cases. That the semen gets thin in a very short time after ejaculation is a fact which is recognised by very few persons and by the time the individual is sufficiently awake to notice the character of the discharge it is already in a thin watery condition. Pollutions may occur in normal individuals immediately after coitus and should not be viewed with any alarm unless there is some other definite sign of disease. Pollutions occurring at day time during sleep hour got no special significance. As regards Curschmann's second class of morbid

pollutions occurring in the waking state we should mention that they do not properly come under this discussion and should be considered under the heading of spermatorrhœa.

In females although there is no physical counterpart of the process of accumulation of semen as in the males still in them also sexual tension finds relief in pollution occasionally during sleep. This phenomenon is exactly analogous to pollution in the males and is usually attended with a similar orgasm and discharge of secretions from the sexual glands.

Treatment of Pollution.

The number of persons who come to the physicians to be treated for pollution is very great and still greater is the number of those who either suffer in silence or go to the quacks for the same purpose. These patients usually complain of general weakness, disinclination for work, nervousness, loss of memory, vertigo or headache, constipation, dyspepsia and a host of other symptoms all of which they ascribe to night pollution. Such patients should be very carefully examined and treatment should be directed towards any organic defect present.

It is really wonderful to see what a large proportion of these cases rapidly recover their health once they are convinced that pollution is a normal phenomenon and need not be bothered about. Where some definite mischief can be traced to the pollution or where its frequency is such as to cause annoyance investigation should be made as to the cause of the trouble. Such cases are contrary to the common belief comparatively rare. The chief causes of excessive night pollution are the following :—

(*a*) **Excessive masturbation**—Excessive masturbation in persons of weak vitality causes a state of slight inflammation

about the ejaculatory ducts. This inflammation produces in the vessels that convey the sperm an increased irritability which is the direct cause of the pollutions. On the other hand excessive pollutions in continent persons have been seen to be relieved when some sort of sexual gratification is obtained either in the shape of natural intercourse or masturbation carried within limits.

(*b*) Gonorrhœa, inflammatory conditions of the urethra or of the neck of the bladder, phimosis, various diseases of the rectum, such as piles, fissures etc., eczema and other cutaneous eruptions of the scrotum and its vicinity sometimes act as aggravating causes. So also the accumulation of smegma in consequence of phimosis, the presence of thread worms in the rectum, or other diseases producing irritation in or about the genitals, may easily cause erections and also nocturnal emissions.

(*c*) Digestive troubles and other causes which disturb normal sleep often act as fruitful sources of nocturnal emissions. Constipation is also another important cause.

(*d*) Tight or too much clothing worn during the night as also very soft bedding and faulty position during sleep by determining a flow of blood to the genital organs often act as existing causes of pollution.

(*e*) Amatory thoughts tend to increase the frequency of pollutions by keeping up a state of sexual tension.

The main line of treatment should be directed against the cause and hygienic mode of life should be followed to tone up the general system. The patient should avoid alcoholic drinks and late meals. The bladder should be evacuated once or twice during the night as the irritation of a full bladder is

an important exciting cause of pollution. The mind should be kept employed during the day, and free from any reading or conversation that would have a tendency to excite the amatory feelings. To prevent lying on the back during sleep tying a towel round the waist, so as to bring a hard knot opposite the spine, will be serviceable and of itself will often prevent emissions in some cases. A threaded reel tied over the spine may be used for the same purpose. *Langots*, bandage and all other similar appliances should be discarded as they are usually quite ineffecient to prevent pollution and do more harm than good. As pollutions are more common during the latter part of night a morning nap should always be avoided by such patient. Plain food without much spices, plenty but not too much of proper outdoor life and good company will cheer up the patient and improve his general condition. Normal and moderate sexual intercourse will very often promptly cure morbid pollutions. Medicines should be avoided as a rule and should only be taken under competent medical advice.

The limit between pollutions and spermatorrhœa has been fixed differently by different authors. The name spermatorrhœa is best applied to those forms of involuntary seminal emissions that are of a high degree and take place during consciousness. Semen is lost at the slightest provocation and even during micturition and defecation. In some normal persons also a small quantity of semen may come out on straining at defecation and too much importance should not be placed on this symptom alone. In spermatorrhœa this loss is more constant and is greater in amount. Spermatorrhœa is a somewhat rare condition and results almost exclusively from excessive masturbation. The disease is gradual in its onset and is often preceeded by excessive frequency of pollutions. The general state of health and appearance of the patient are more or less sickly in proportion to the grade of disease. In advanced cases the patient presents a typical picture of exhaustion. The chief disorders make themselves felt in the digestive organs and in the nervous system, the deleterious influence on virility being constant and finally destroying it totally. In this diminution of virility and in the incessant pondering over the loss of semen, repeating itself without remission and driving the patient to despair, is most often to be found the cause of the changes in character which are nearly always observable in such patients. In most cases of spermatorrhœa the exterior appearance of the sexual organs points to morbid changes. The penis and testicles with their surroundings have generally a flabby, withered look; the

testicles hang lower than they should and are sometimes sensitive even to light pressure. Almost without exception there is a diminution of the warmth, sensitiveness and irritability of the sexual parts.

Vecki says "The treatment of spermatorrhæa is truly in a lamentable state. The first increase in the frequency of pollutions is scarcely ever treated rationally, because the patient either does not mind it or avoids consulting a physician about it from false modesty, or, finally because he finds that his doctor neither understands his ailment nor even listens to his story."

Treatment of Spermatorrhœa.

The root cause of the malady should be found out and should be removed as soon as possible. Masturbation which is the most frequent cause of spermatorrhœa should be considered at once. Phimosis or any cause of irritation of the genitals should be at once removed. The patient's mode of living should be controlled. He must abstain from difficultly digestible food and spicy dishes. He must empty his bladder before going to bed and must at all times care for regular defecation. He must sleep on a bed moderately but not too hard. He must not sleep longer than the necessary time, which should be determined for him. In bed he must not be covered too warmly and he must not sleep on his back. He should not sit on upholstered seats; he must not ride on horseback or a cycle and he must avoid conveyances as much as possible. The patient must not excite himself sexually without necessity. Vecki says "of special importance is the regulating of sexual intercourse, because the pollutions cannot possibly be cured during absolute abstinence."

Hydro-therapeutic and electro-therapeutic measures adapted to individual cases are of immense benefit in some cases. Sea-bathing also does good.

The use of a sound or bougie and the application of medicaments inside the urethra by special instruments have been strongly recommended by some authorities. As these procedures are likely to do more harm than good in unskilful hands they should never be undertaken by anybody except the the most experienced genito-urinary surgeons.

Bromides, camphor, arsenic etc. are sometimes found very useful but they should never be used except under competent medical advice.

Premature Ejaculation.

This condition may arise apart from spermatorrhœa of which it forms one of the most prominent symptoms. It is a cause of mental depression in many cases and may render the patient intensely miserable. In the most advanced forms of this disease mere contact with a woman or even an erotic thought brings about an ejaculation. The condition usually results from excessive masturbation or may be the result of general nervous irritability. The treatment is the same as in the case of spermatorhœa. It is a curious fact that a very great number of persons with a perfectly normal sexual vigour believe their ejaculations to be premature; this results from a false idea of the possible duration of the sexual act which the popular mind believes to be anything from fifteen minutes to half an hour. A normal sexual act takes from one and a half to about five minutes and no wonder such a large number of persons believe themselves to be suffering from premature ejaculation. After prolonged continence the first effort at sexual intercourse generally ends in premature ejaculation. Too much preliminary dallying with the object of love has also a similar effect. Such cases come within the range of normal phenomena and should not occasion any anxiety. The urethral discharge which makes its appearance during excitement is very often mistaken for semen and often causes much useless and undue anxiety.

IMPOTENCE

By sexual impotence is meant the loss of power to perform normal coitus. It also includes sexual weakness, the patient being able to have intercourse, but in a weak unsatisfactory manner. Sexual impotence or as it is scientifically called *impotentia cœndi*, must be distinguished from *impotentia generandi* or sterility of the semen. A man may be potent sexually, and yet not have the power to procreate or he may have active spermatozoa in his semen but lack the power of copulation. Vecki's etiological classification of impotence is as follows.

1. From congenital malformations and defects of the sexual organs.
2. From acquired defects in the organs of generation.
3. Consecutive.
4. Inherited.
5. Neurasthenic.
6. Professional.
7. Senile Impotence.

1. Congenital malformations and defects of the sexual organs.

Impotence due to congenital malformation and defect of the sexual organ is an extremely rare condition. The more important of these defects are enumerated below.

Absence of the penis :—It is estimated that one male in about thirty millions is born with this abnormality. There are only six authentic cases recorded in literature. Entire absence of both testes is also as rare.

Extreme smallness of the penis alone or of the penis and testicles, occurs now and then and is noticeable either at birth or later as an arrest of development. If the development of the testes be normal, sexual desire and relative capacity for coition may be preserved unweakened even when the penis is extremely small. If both penis and testicles are diminutive sexual desire is generally very poorly developed.

Excessive development of the penis :—Is usually indicative of great sexual power. It offers no obstacle to coition provided a proper mate is found.

Abnormal curvature :—The normal penis during erection assumes a slightly curved form, the concavity of the curve being on the dorsal surface. This curve varies in different individuals. Congenital flexion of the penis arising from a deformity in the corpora caveronosa is a rare condition. Lateral curvature of the penis is of pretty common occurrence but it is usually no bar to sexual intercourse. Curvature to a considerable degree in any direction would render copulation impossible.

Flabbiness of the penis :—Owing to defective development of the erectile tissue the organ may be abnormally flabby and copulation might be impossible.

Phimosis :—Phimosis sometimes affect the growth and development of the erectile tissue and may bring about impairment of virility.

Short Frenulum :—When the frenulum is too short it is a hindrance to erection. A short frenulum may be torn repeatedly during coitus. Surgical interference is necessary for this condition.

Hypospadia and Epispadia :—Hypospadia of a high degree—*i. e.*, congenital opening of the inferior wall of the urethra and the still rarer condition epispadia—*i. e.*, congenital opening of the uper wall of urethra—may cause partial or absolute impotence.

Monorchidia and Cryptorchidia : -Monorchidia is a condition in which both the testes remain in the abdominal cavity—the scrotum being empty. Young people afflicted with such defects become very unhappy the moment they are acquainted with their condition. In reality however there is seldom any cause for apprehension as the sexual power is rarely affected.

Hermphroditisms, Ectopia Vesicae :—In these conditions there is generally a very pronounced malformation of the genital organs and sexual intercourse is impossible.

II. Acquired defects in the sexual organs. Entire or rtial loss of penis or testicle.

In eunuchs the external organs of generation are removed during infancy and in such cases copulation is out of the question. Neglected venereal diseases, malignant tumours unfortunate accidents and traumatic influences may cause loss of the penis and testes. When the penis only is lost the condition is really pitiable because the sexual appetite is left, while the possibility of satisfying it is gone. If however a portion of the penis in left there is no impotence as long as the stump remains erectile. If the testes are lost before puberty, both sexual desire and capacity for sexual gratification are impossible, whilst both may be preserved for some time, possibly for a long time, if the testicles are lost after puberty. Such cases as are recorded where women have amused them-

selves with castrated men refer to individuals who had been emasculated only a short time or at best, after puberty.

Hydrocele, scrotal tumor and inguinal hernia, if of a high degree, may encroach upon the integument of the penis, causing that organ to disappear from view completely thus causing a mechanical impediment to copulation.

Strictures of the urethra may sometimes cause impotence.

III. Consecutive impotence.

Sexual intercourse requires for its performance a normal state of the whole body; hence it is that various diseases can affect sexual vigour and even destroy it. It has been observed that sexual desire is increased during the prodromal state of many acute diseases but during the actual illness sexual appetite is practically absent. After a protracted, severe and exhausting illness, during which the secretion of semen is diminished or arrested, impotence sometimes lasts a long time. Phthisis, dyspepsia, oxaluria, diabetes, kidney diseases, anæmia and diseases of the central or peripheral nerve apparatus sometimes produce loss of sexual vigour; obesity very often leads to impairment of the virile powers. Kisch found that the sperm of nine out of ten obese men showed under the microscope only molecular detritus and sperm crystals but no spermatoza at all. In case of obesity of a very pronounced degree especially when there is a pendulous abdomen copulation may be mechanically impossible. Neurasthenia, diseases of the sexual organs such as wounds and ulcers, gonorrhœa etc., diseases of the prostate and bladder may heighten the sexual desire at first but latter on produces a diminution of the sexual vigour.

Certain poisons, medicaments and food are credited with the power of diminishing virility. Among these may be mentioned excessive consumption of alcohol, tea and coffee. Snuff-taking is specially injurious in some cases. Acute lead poisoning, mercury, salicylic acid, monobromated camphor, big and continued doses of bromides and iodides, antipyrin, sodium nitrate etc. have been known to cause a lessening of sexual vigour. The popular belief of certain foods having an aphrodisiac quality is not supported by scientific evidence.

IV. Inherited predisposition to impotence.

Hoffmann says—"It is a fact that there are men who from their birth either lack the incitomotor impulse which dominates over the sexual function, especially erectility, or in whom it appears abnormally impared." In certain families the sexual instinct is very feebly developed although in built and appearance nothing abnormal can be detected among the members. Disinclination for sexual pleasure or frigidity is natural with some persons so also sexual nervousness. Vecki says—"There are individuals, who with vigorous constitutions, normal development of the genitals and very energetic sexual desires, nevertheless become temporarily impotent, where we can find no other cause than an inherited general or sexual nervousness which, at the given moment, either excites the inhibitory centres of erection to an abnormal activity or sets the nerve centres of erection out of function." There is another form of congenital impotence due to perverse sexual sensation. Subjects suffering from this condition can satisfy their sexual desire only in a peculiar manner. Such persons are not impotent in the absolute sense of the word as erection is not lacking with them and yet they must

be called impotent because coitus cannot be performed in the normal way.

V. Neurasthenic impotence.

Under this collective name Vecki discusses all those forms of impotence dependent on a gradual degeneration of the sexual nerves and their centres. The exact nature of these degenerative changes however is not yet known and it is common to include under this heading all forms of sexual weakness the origin of which we cannot trace to any structural change in the organs of erection and secretion, or which cannot be ascribed to any distinct appearance of disease in the body or in the so-called psyche.

Neurasthenic impotence is caused by excess in venery, either or the time being or habitually, by masturbation and occasionally by abstinence of longer or shorter duration. These points we have already discussed in a previous chapter and need not go into again.

A common form of impotence is that kind of sexual neurasthenia which is generally called psychical impotence. There are individuals who though healthy in every respect may become temporarily impotent simply by the effect of the thought that they are impotent, or by the fear of not being able to give satisfaction in a certain case. In psychical impotence every thought likely to divert the mind from the act in contemplation can also prevent erection altogether or overcome it if already begun. Hence it is a matter of course that anxiety, fear, shame, or any other feeling that may engage the mind cannot be favourable to erection; and the thought alone that one may not be able to accomplish coitus can become a hindrance to erection. Quite vigorous and robust

individuals may be affected with neurasthenic impotence of the psychical type and the affection renders their life miserable.

The manifestations of psychical impotence may be extremely various. The patient may have viogorous erections but they come at the wrong time. Another patient finds that his eretion though vigorous at first fades away directly the act is begun. A man may be impotent with one woman while he may enjoy normal sexual intercourse with another. Veckl says "If a man has cohabited for a long time with one woman, the beginning with another is attended with some difficulty; hence the trouble experienced in the first matrimonial infidelity, which often drives a husband back to the arms of his better half."

Young persons sometimes find themselves impotent in the beginning of matrimony merely from the novelty of the situation. There is another form of impotence called temporary impotence as a result of which a man within short intervals of time be now virile and now impotent.

VI. Professional Impotence:—Vocations which require a great deal of mental exertion have a distinctly injurious influence on the sexual virility. Excessive physical exertion also is harmful in this respect.

VII. Senile Impotence:—Just as all the tissues of the body undergo degeneration with advancing years so also the sexual organs cease to operate in old age and a natural impotence follows. There are however great individual differences about which we discussed fully in a previous chapter.

The treatment of impotence is a very difficult affair and should only be entrusted to experienced medical men. Allow-

Treatment of Impotence.

ance must be made for the idiosyncrasies of the patient and it should be remembered that one and the same remedy has not an equal effect on all men. The physician should inspire the patient with courage and confidence and mental influence goes a great way in the treatment of impotence.

The methods for treating impotence are numerous. The treatment may be either general or local; the application of medicaments, hydrotherapeutics, electricity, massage, etc. Each one of these groups comprises many single methods and remedies.

Psychical treatment is indispensable in every form of impotence. The hopelessness and distrust of the patient should be removed. Fear alone may be responsible for impotence in some neurasthenic cases and a little judicious encouragment will take away that fear and restore patient's self-confidence. Hypnotic treatment is sometimes very efficacious. The patient should be induced not to think continually of his disease. For this purpose suitable occupations and distractions should be provided. Driving, riding, theatres, concerts, balls, gymnastics, fencing, swimming, skating, bicycling, rowing, pleasant journeys of moderate duration, etc, may be recommended.

Reading of erotic literature, contemplating piquant pictures and all sorts of actions likely to produce sexual excitement should be avoided. If the patient feels inclined to intercourse he might indulge in it. The patient however must be told not to allow single failures to affect him too much, but to look upon them with indifference and treat them as casual mishaps. Virility often returns when the peace of mind is

assured and this is a reason for the well known fact that young husbands who fancy they are impotent are often cured by the mere forbidding of coition. The object is to re-establish mental composure with which often comes the erection also.

The patient should be very carefully examined with a view to find out any existing defect which might directly or indirectly lead to impotence. Such defects must first be removed before the treatment of the impotence itself can commence. Organic obstacles must if possible be removed by surgical operations; diseases should receive appropriate treatment. Special attention should be paid to the treatment of oxaluria, obesity, anæmia and the various forms of neurasthenia. Diabates should be contolled by proper remedies and dietatic restrictious. Onanists should be cured of their habit, proper remedies applied in case there is spermatorrhœa, pathologial irritation or a condition of weakness in the genitalia.

In the treatment of impotence special stress is to be laid on a hygienic manner of living. Food, physical exercise and rest, also dwelling and clothing, must be strictly directed according to the rules of hygiene.

Certain articles of diet have been credited with aphrodisiac properties. Chief among these may be mentioned meat and other nitogenous foods, oysters, fish, garlic, onions, saffron, mustard, cinnamon, ginger etc. These substances might have a slightly stimulating effect in certain instances but there is no doubt that their aphrodisiac effect has been much exaggerated. Raw eggs may frequently be of service but even they just as alcohol, spices and a rich nitrogenous diet "are liable to act as two edged knives do, and cause harm to all

these high-livers who endeavour to stimulate the activity of their intoxicated organs by stuffing themselves with oysters, caviar, cheese, ale, porter and many other exhilarating substances".

In advising the dietary it should be remembered that the nourishment must be suited to the state or condition of the body, every superfluous production of fat being injurious to virility.

All sorts of alcoholic drink should be prohibited in cases of impotency. In this connection Vecki expresses the following opinion :—

"I make an exception only in the case of persons of feebly developed sexual desire; these may take two glasses of German beer or one glass of good, strong California wine shortly before intercourse. Beer or wine, however, must never be taken in such quantities that the stimulating effect may be followed by a paralyzing influence, be it ever so slight."

The manner of living must also be carefully regulated in accordance with hygienic laws and a proper proportion observed between physical or manual occupation and rest. The patient ought to divert himself with mental exercise and amusement and he should strengthen his body by gymnastics, systemetic breathing exercises, walks and so forth. Fatigue of every kind must be avoided, all activities must be followed by an appropriate interval of rest. The patient should have about eight hours sleep during the night.

Innumerable drugs have been recommended by different authorities as having beneficial effect in the treatment of impotency. It must be admitted that while most of these

fail to produce the desired effect one or other drug may sometimes in connection with other remedies prove successful. Some of the drugs used in the treatment of impotence are extremly poisonous and should never be used except under expert medical advi e. Among the remedies that have been and are still being used for impotence may be mentioned the following :—Cantharides, Phosphorus, Nuxvomica, Atropine Ergotin, Quinine, Cannabis Indica, Opium and Morphia in small doses, Cocain, Damiana, Yohimbin and others.

Numerous forms of hydro-therapeutic measures have been recommended as being very efficacious in the treatment of sexual impotence. Of these may be mentioned local and general ablutions, rubbing down, flapping, sponge-baths, rain or douche or shower baths, sitz baths, half baths, full-baths, vapour-baths, river baths, sea-baths and many mineral baths ; also the application of cooling sounds and injections of cold water into the urethra and rectum.

Simple ablutions have too feeble an effect to be of much use in any form of impotence. They are however useful in maintaining cleanliness and should be observed as a hygienic measure both by the virile and the impotent. Washing of the spine and genitalia with spirituous fluids is a common domestic remedy. Rubbing down, flapping and sponge baths are easily applied and are useful stimulating measures. Rain and douche-baths produce powerful stimulation and are very useful in some cases. Winternitz recommends *douche filiforme* or thread like shower bath directed upon the glans as having good effect in impotence ; sitz-baths taken cold and for a short period of time is a valuable stimulating agent. The most stimulating form of bathing is river bathing and

sea-bathing, which often perform real miracles with the impotent. Milder forms of impotence are very frequently cured by river bathing alone, and still better by sea bathing. For river-bathing are to be preferred those rivers or parts of rivers which present a moderate depth combined with a strong and rapid current, and, likewise for sea-bathing, places where the billowing is strong. River bathing or sea-bathing should not be recommended to those who are in a very weak or debilitated state of health. Protracted bathing in warm water is harmful.

Simple injections of cold water into the urethra or rectum are very efficacious on account of the mechanical stimulation and effect of cold combined. "The injection of cold water into urethra is made use of by sailors as a means of temporary excitation after long continence."

Hot and cold air douches administered by means of special instruments are found to be efficacious in certain cases.

Different varieties of electrical currents have been highly recommended by different authorities in the treatment of impotence. The galvanic current is administered by applying the zinc pole over the cord in the lumbar region, and the copper pole to the upper and under surfaces of the penis, to the testicles, perineum and the spermatic cord downward from the inguinal ring. When the spinal cord is to be stimulated the copper pole is applied to the back of the neck and the zinc pole to the region of the lumbar vertebræ. A more powerful stimulation is obtained by applying the copper pole to the lumbar region and the zinc pole to the perineum. The manner of application of the faradic current is the same as that of the galvanic; weak induction currents applied for

prolonged period revive the excitablity of weakened nerves. Static electricity, franklinization or general electrization, and high frequency currents are frequently used and very good results have been obtained thereby in recent times. Hydro-electric baths are useful where the general metabolism is defective,

Exposure of the testes to concentrated sun's rays till the skin becomes red have been very strongly recommended by some authorities. Since the introduction of the endoscope an instrument by which a view of the interior of the urethra may be obtained a large number of cases of impotence have been found to be caused by disturbance in the interior of the the deep urethra. Local application of caustics and other remedies by special applicator sometimes produce marvellous results in these cases. Such applications however should only be entrusted to experienced urethral surgeons as much harm might be done by unskilful manipulation.

Good results are obtained in certain cases of impotence by the introduction of flexible bougies or metal sounds. Extreme caution is however necessary and only experts should try this method.

Many authors recommend the external applications to the genitalia of various substances, such as tincture nucis vomicæ, eau-de-cologne, alcohol etc. Such applications by increasing the vascularity of the parts in question may temporarily excite the cutaneous nerves.

Numerous mechanical appliances have been designed either to remove sexual impotence itself or to enable the impotent to introduce the non-erected or partially erected penis into the vagina. The appliances have a certain field of

utility and may prove useful in a limited number of cases. Krafft-Ebings' opinion on this subject is worth quoting. He speaks of Paul Gassen's erector as follows :—

"Paul Gassen's erector is in general adapted to afford the results claimed for it. It gives to the penis at least part of the rigidity requisite for the inimissis in vaginam. Conditions of absolute impotence are rare and are caused only by severe vertebral and nervous diseases. In medical practice we have, in a vast majority of cases, to do merely with relative impotence through psychical causes (exhaustion as a consequence of excesses of individuals who have abused the natural sexual pleasures or in consequence of onanism) or psychical imaginary obstacles, fear of failure, etc.) Here a considerable or virtually the full power has been preserved, and the erector may, in the first case, compensate for the failing remainder of power, and afford, as it were, a crutch for the lame ; in the latter case it acts, in combination with its mechanical action, psychically, and awakening the confidence in the required capacity, it compensates for the imaginary obstacles called forth by the mistrust of his own power, under circumstances preventing erection."

In the treatment of most forms of impotence special weight must be attached to the regulation of the sexual life. The nature and form of the disease and the constitution of the patient should be carefully considered. There may be cases in which the physician is compelled to order absolute continence; generally however the physician will find it necessary to order the patient to have regular intercourse, and this advice may have to be given sometimes from the very begining, sometimes later in the course of the treat-

ment. Vecki says in this connection:—"Whenever regular sexual intercourse seemed necessary physicians have, in all times, advised marriage. It is a serious matter to advice matrimony, for no physican wishes to carry on his conscience the misfortune that may arise from another man's matrimonial venture. It must, however, be admitted that marriage with a suitable person is the safest and most reliable remedy for many forms of impotence and it serves also as a great preventive against the contraction of impotence. On the other hand most patients object to matrimony. In such a case the physician will of course not insist on his advice. Others again dare not venture to enter into matrimony because they believe themselves to be unable to fulfil their conjugal duties. If the physician finds this to be true there is again every reason for not advising matrimony.

As marriage is heroic and very dangerous remedy not accessible to every one and as a mistake in this affair is so difficult to correct, many a convalescent patient will be compelled to have recourse to other connections than hymneal in order to satisfy his sexual desire, if he does not want to become impotent again or to be troubled again by morbid pollutions. He must satisfy this natural want regularly and the act cannot be called immoral simply because it is accomplished out of wedlock. We must however consider the dangers of venereal diseases." The demands of sexual morality are imperative. Sexual indulgence with a woman who is not wife should never be indulged in the interest of social good. Impotence is better than improper sexual intercourse.

Suspension by means of Sayer's apparatus sometimes produces excellent results. The suspension is seldom continued beyond five minutes.

Psycho-therapeutic measures in the shape of hypnotism or psycho-analysis sometimes produce marvellous results in neurasthenic impotence.

Organotherapy by the administration of testicular extract, Brown-Sequard's liquor testiculorum or Pœhl's Spermin produces good result in a limited number of cases.

HINDU SYSTEM OF SEX HYGIENE.

To the religious Hindu, giving birth to the offspring is a sacred duty and the sexual power is a sacred trust. The agriculturist knows that for getting good crops, the seeds should be of proper quality and growth; the Hindu scientist believes that healthy robust manly virtuous progeny depends upon the cultivation of good human male seeds and female ova. The Hindu thinkers thought much on the science of Eugenics and the fragments left, show how anxious they were for improving the breed and keeping up the high standard of the better breeds of men. In the west, Eugenics may have taken birth with Mr. Galton but in India, the Science of Eugenics is a part and parcel of the Sacred Literature of the land. We can not enter into that vast Hindu Science of Eugenics in this book or into the whole of the Science of Hindu Sex Hygiene. We give here only a slight glimpse of Hindu Sex Hygiene without giving the matter such attention as it deserves.

What is Brahmacharya?

वीर्यधारणं ब्रह्मचर्यं—"Brahmacharya" is absence of secretions of Semen. The testicles secrete Semen; this physiological phenomenon is always associated with rising of sexual emotion in the mental plane, whether conscious or subconscious. Secretion of Semen and Sexual emotion are only two aspects of the same motion in organic life, one being a manifestation in the realm of phenomenal matter and another being a manifestation in the realm of phenomenal mind. One

index or sign of true mental purity is absence of Secretion of Semen.

कायेनमनसा वाचा सर्व्वावस्थासु सर्व्वदा
सर्व्वत्र मैथुनत्यागो ब्रह्मचर्य्यः प्रचक्षते ॥

Brahmacharya is relinquishment of sexual enjoyment through body, mind or words, in all conditions always and in all places. Maharsi Charaka Says :—"चरतो विश्वरूपस्य रूपं द्रव्यं यदुच्यते" The Semen is the material manifestation of the ceaselessly moving manifested life of the Divinity.

He says :— "ब्रह्मचर्यं आयुष्कराणां" of all the ways for securing long life, "Bramacharya" is the best. According to Lord Charaka, absence of secretion of Semen is one of the best ways of securing long life. Lord Patanjali say's—"ब्रह्मचर्य प्रतिष्ठायाम् वीर्यलाभः Prowess comes from observation of "ब्रह्मचर्य".

what is the value of Brahmacharya.

Relinquishment of "Maithoon" (मैथुन) has been called Brahmacharya. The smooth motion of the activity of sexual emotion whether in the conscious mind or in the subconscious mind, fills the mind with a sort of joy. The satisfaction of sexual emotion whether by bodily movements or by process of our mind or by words, is "मथुन". This sexual enjoyment may be in eight ways :—

Different kinds of Maithoon.

स्मरणंकीर्त्तनं केलि, प्रेक्षणं गुह्यभाषणं सङ्कल्पोऽध्यवसायच क्रियानिष्पत्तिरेवच ॥

(1) (स्मरणं) Mind fondly loiters over the memories of the beautiful image, beautiful hair, beautiful eyes, beautiful

lips, beautiful hands of the woman, her sweet words, her caresses, over memories of enjoyments in her company. All such memories are sustained by a strong undercurrent of pleasure of satisfaction of a heart's desire. It is Sex-impulse seeking satisfaction through memories of the mind. It is one manifestation of "मैथुन"

(2) कीर्त्तनं The lover finds a strong delight in singing—in describing the praises of the woman.

(3) केलि—The various carnal enjoyments between the lovers through their sense organs other than the actual physical intercourse for breeding, constitute "Keli."

(4) प्रेक्षणं—To one under the influence of sexual emotion the sight of the woman is a thing of joy for ever.

(5) "गुह्य भाषणं"—Is indulging in secret amorous conversational enjoyment between lovers.

(6) संकल्पः is desire for woman.

(7) अध्यवसायः is endeavour to secure the sexual love of a woman.

(8) "क्रियानिष्पत्तिः—Is the final physical intercourse which leads to birth of progeny.

The sexual impulse finds satisfaction in the mental processes of recollections of all love associations and in praise of lady-love; in the mental processes of thirst for and endeavour after lady-love; in looking after and in secret whispering love talks with lady-love; these last two are enjoyments through the higher senses of eye and ear. The sexual impulse is satisfied through embraces, kisses, touches &c. *i.e.*, through all sorts of enjoyments—through touch and

muscular sense, between the lovers. All these various satisfactions open or secret, conscious or subconscious, involve activity of sexual impulse and secretion of semen in the testicular glands,. All these amount to "मैथुनं".

What should be done to secure "Brahmacharya."

To secure "Brahmacharya" all these processes of sexual excitement should be avoided. No doubt to secure thorough mental purity is a very difficult task. Most of our young people can not always keep an absolute mental purity. It is, therefore, that the secretions of semen that take place during mental sexual activity मानसिक मैथुन have to seek out passage by night-pollutions when the youngmen are physically chaste and unmarried.

Pollutions in Hindu System.

According to Hindu religious system, pollutions are looked upon as sins. "Penance" (प्रायश्चित्त) has been provided for pollutions. The perfect man who can keep "ब्रह्मचर्य्य" without any violation, never allows any activity of sexual emotion in the conscious or subconscious mind. His superior mind controls the both. He is mentally pure. There is no useless secretion of semen in him ; he does not get any night-pollution. The man who gets pollution gets the same because of his mental impurity ; he is, therefore, a sinner.

To all our readers, we, however, give this warning ; that almost all of us of this age, are absolutely unable to live up to this high ideal of purity of Hinduism. What is abnormal and sin according to this ideal is normal with us. From our early years, the minds of the cultured classes are filled

with love poems, love stories, love tales, love dramas, and from this age, the sexual passion in the mask of fine literature, fine poetry, fine painting, fine music, revels in glorious secret enjoyment. In the city life, there are many things which help enjoyment of sexual passion through our eyes, ears and mind. No wonder, then, that night-pollutions in the case of physically continent chaste young people are a normal phenomena in these days. Laziness, indolence, high living, constipation, nervous strain and worry, keep up also an artificial excitement of sexual emotion and of the testicular glands; violation of laws of health is sinful and this sin is, thus, also a cause of night-pollutions. Bad health of this life may also be the result of sin of a past life, accordiug to Law of Karma. Night-pollutions though arising from our sins, according to Hindu religious idea, is normal and natural with almost all of us, at a certain age. When not excessive, never be alarmed of them and never trouble your mind with them. Take them as natural and normal, so long you do not feel any physical real weakness or debility which is not imaginary. We cannot say how many pollutions may be taken as normal now, but for a vigorous physically chaste youngman, two per week, may not be injurious in many cases.

Bhaba Mirsa's following opinion in Bhabaprakas, was probably arrived at from experience of people impure minded either congenitally or through enverimental influence. "शरीरे जायते नित्यं देहिनां सुरतः स्पृहा, ब्रह्मचर्यात् मेहमेदोऽस्थि विधिवता तनौ" Desire for sexual intercourse is constantly present in those who have body. Fatnesss, the disease Meha and bodily debility arise from continence."

Age for sexual intercourse.

Maharsi Charaka says :—

"नर्त्तवे षाड्गाद् वर्षात् समतुल्याः परतो न च
आयुष्काम, नरो स्त्रीभिः संयोगं कतु मर्हति"

From the standpoint of personal long life, sage Charaka prohibits sexual intercourse under the age of 16 years and after seventy years.

Maharsi Susruta says :—

"पञ्चविंशे ततोवर्षे पुमान् नारीतु षोडशे।
समत्वागतौ वीर्यौतौ जानीयात् कुशलो भिषक्॥

But for having good and healthy offspring, the standard by Maharsi Susruta is a different one. The learned docter should know that a male on attaining 25 years of age and that a female on attaining 16 years of age, have got properly matured power for getting good progeny. Healthy and virtuous offspring is the end of Hindoo marriage, from a religious standpoint. Such offsprings can be had only on father attaining 25 years of age and the mother 16 years of age.

Sage Susruta says :—

"ततोऽपराद्दे पुमान् मासं ब्रह्मचारी सर्पिः
स्निग्धः सर्पिः क्षीराभ्यां शाल्योदनं भुक्ता
मासं ब्रह्मचारिणीं तैलं स्निग्धं तैलंमाषोत्तराहारां
नारीमुपेयात्॥

From this passage, it is clear that Sage Susruta advises "Brahmacharya" to be observed both by the male and by the female for one month before begetting progeny. Certain courses of food and anointing have been also prescribed.

'Absolute purity of a month, improves the quality of the ovum and the male-seed out of which man is created.

Sage Charaka says :—

जरया चिन्तया शुक्रं व्याधिभिः कर्म्मकर्षणात्। क्षयं गच्छत्यनशनात् स्त्रीणाञ्चाति निषेवणात्॥

The Semen decays from (1) Old age (2) Cares and anxieties (3) Diseases (4) Hard over exertion (5) Want of food (6) Excess in female enjoyment.

Two schools in the matter of Sexhygiene.

As in western countries, one school eulogises highly the value of mental purity and absolute continence, while another school praises sexual enjoyment not in excess and not abnormal, similarly we have in Hindusthan, two classes of thinkers. Bhabamisra belongs to the school which highly praises sexual enjoyment when not excessive and not abnormal. The truth seems to be that while absolute continence does no harm in the case of persons of good health who obey laws of health and keep a pure mind and who do not possess any abnormally strong and pressing sexual passion which when left unsatisfied makes life a misery. On the other hand normal and not excessive sexual gratification in morbid life during good health, promotes the health of a very large number of people who either through congenital defect or bad enviramental influence, are incapable of keeping a pure mind in a life of absolute continence and who in case of absolute continence feel an abiding sense of misery through the pressure of unsatisfied sexual passion.